

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 23	
2. AMENDMENT/MODIFICATION NO. 0002		3. EFFECTIVE DATE 22-Dec-2004		4. REQUISITION/PURCHASE REQ. NO. W16ROE-4308-5191		5. PROJECT NO.(If applicable)	
6. ISSUED BY US ENGINEER DISTRICT, NEW YORK US ARMY CORPS OF ENG, NYD NEW YORK NY 10278		CODE W912DS		7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. W912DS-05-B-0004	
				X		9B. DATED (SEE ITEM 11) 30-Nov-2004	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) The purpose of this amendment is: 1) To incorporate questions and answers. Answers are for informational purposes only. The bid opening date remains unchanged, 19 January 2005 at 10:00 AM EST. All other terms and conditions remain unchanged. NOTE: Bidders must acknowledge receipt of this amendment by the date specified in the solicitation (or as amended) by one of the following methods: In the space provided on the SF 1442, by separate letter, or by telegram, or by signing the block 15 below. FAILURE TO ACKNOWLEDGE AMENDMENTS BY THE DATE AND TIME SPECIFIED MAY RESULT IN REJECTION OF YOUR BID IN ACCORDANCE WITH THE LATE BID, LATE MODIFICATIONS OF BIDS OR LATE WITHDRAWAL OF BIDS (FAR 14.304) Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED 22-Dec-2004	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

AMENDMENT #2 - Q&A

**ADDENDUM 0002 TO DRAWINGS AND SPECIFICATIONS FOR FY05 DORMITORY
REPLACEMENT, THULE AIR BASE, GREENLAND –
W912 DS-05-B-0004**

TO OFFERORS

The following changes shall be made to the drawings and specifications.

Drawings

The following DRAWINGS have been **REVISED but NOT REISSUED**.

- 1) **CHANGE**, Drawing file number 8008-11006, Drawing **C-103**, sheet 7 of 131 as follows:
 - a) **RELOCATE** the proposed fire hydrant so that it is parallel with the fire department connection.
 - b) **REMOVE** the valve on the new water service line adjacent to the building.
 - c) **ADD** a post indicator valve on the new water service line near it's connection to the existing line.
- 2) **CHANGE**, Drawing file number 8008-11007, Drawing **C-104**, sheet 8 of 131 as follows:
 - a) **REMOVE** the "3.0M" dimension to the right of the interior column in detail 4/C-104.
- 3) **CHANGE**, Drawing file number 8008-11009, Drawing **C-501**, sheet 10 of 131 as follows:
 - a) The origin refer of details 1,2 and 3 on this sheet should be changed from C-101 to C-105.
 - b) The 150MM x 200MM lumber shown in detail 1/C-501 will have pre-cast concrete dead weights located at each end. The size of the pre-cast concrete dead weights will follow base standards. The size of the pre-cast concrete dead weights is 400MM wide x 350MM long x 250MM deep. The bottom of the pre-cast concrete weight will have a 75MM deep slot that is sufficiently wide to fit over the 200MM wide lumber foundation. The pre-cast concrete weight shall contain a pair of D=6 deformed bar stirrups and a single D=10 deformed bar handle connected to the stirrups that loops out the top of dead weight to serve as a handle. The approximate weight of each pre-cast dead weight is 68 kg.
 - c) The 150MM dimension under the lumber on detail 1/C-501 is gravel.
- 4) **CHANGE**, Drawing file number 8008-11013, Drawing **C-505**, sheet 14 of 131 as follows:
 - a) On detail 6/C-505, replace the PIV with a gate valve.
 - b) **REMOVE** the 135MM dimensions from the plan view on detail 6/C-505 and replace with 1500MM. This dimension represents the dimension of the concrete foundation beyond.

- 5) **CHANGE**, Drawing file number 8008-11028, Drawing **A-201**, sheet 29 of 131 as follows:
 - a) **REPLACE** text of keynote 8.01 "Operable Aluminum Casement Window with Insulated Glazing" with "Operable Plastic Casement Window with Insulated Glazing."
- 6) **CHANGE**, Drawing file number 8008-11029, Drawing **A-202**, sheet 30 of 131 as follows:
 - a) **REPLACE** text of keynote 8.01 "Operable Aluminum Casement Window with Insulated Glazing" with "Operable Plastic Casement Window with Insulated Glazing."
- 7) **CHANGE**, Drawing file number 8008-11045, Drawing **A-505**, sheet 46 of 131 as follows:
 - a) On detail 5/A-505, keynote 7.16 should be labeled 7.15.
 - b) **CHANGE**, Drawing file number 8008-11057, Drawing **A-517**, sheet 58 of 131 as follows:
 - c) Detail 6/A-517: The construction of a safety rail will be similar in construction to that of the interior stairs located on detail 8/A-404. **ADD** provisions for a metal galvanized hand rail to be placed on both sides of the walkable surface in the attic. Handrail to be located at all sides of the walkable surface including the ends. Hand rail to be 915MM above the walkable surface and be 38MM in dia.. Post to support handrail will be 50MM in dia. and be spaced no further then 1200 MM O.C.. (5) tension cables will run horizontally between the posts and be spaced equally spaced vertically. Turn buckles will be place on each cable to adjust the tension. Posts will have 12 MM dia. holes to allow cables to pass through.
- 8) **CHANGE**, Drawing file number 8008-11060, Drawing **A-602**, sheet 61 of 131 as follows:
 - a) **REPLACE** text of keynote 8.01 "Operable Aluminum Casement Window with Insulated Glazing" with "Operable Plastic Casement Window with Insulated Glazing."
- 9) **CHANGE**, Drawing file number 8008-11103, Drawing **E-104**, sheet 104 of 131 as follows:
 - a) **REPLACE** "SCHEDULED 80 PVC" in keynote #4 with "GALVANIZED RIGID METAL"
- 10) **CHANGE**, Drawing file number 8008-11107, Drawing **E-502**, sheet 108 or 131 as follows:
 - a) **REPLACE** "#12 AWG" wiring on Circuits #26, 28 and 30 with "#10 AWG."
 - b) Detail 1/E-502: **REPLACE** "Block Heater receptacle with weather cover" with "Block Heater cord with female plug. Cord to be a min. of 2400MM (8'-0") in length."

The following DRAWINGS have been **REVISED and RE-ISSUED.**

- 1) Drawing file number 8008-11000, Drawing **G-001**, sheet 1 of 131 has been re-issued in it's entirety. All revised drawings for this addendum have been clouded on the Drawing index.
- 2) Drawing file number 8008-11014, Drawing **B-601**, sheet 15 of 131 has been re-issued in it's entirety. All boring logs on this sheet have been revised.
- 3) Drawing file number 8008-11100, Drawing **E-101**, sheet 101 of 131 has been re-issued in it's entirety. Room names and numbers have been added.
- 4) Drawing file number 8008-11101, Drawing **E-102**, sheet 102 of 131 has been re-issued in it's entirety. Room names and numbers have been added.

- 5) Drawing file number 8008-11102, Drawing **E-103**, sheet 103 of 131 has been re-issued in it's entirety. Room names and numbers have been added.
- 6) Drawing file number 8008-11105, Drawing **E-401**, sheet 106 of 131 has been re-issued in it's entirety. The ceiling light fixtures have been changed in the JNCO kitchen. Fire Alarm information has been added to this drawing.

The following DRAWINGS have **NOT been REVISED but have been RE-ISSUED.**

- 1) Drawing file number 8008-111021, Drawing **A-102**, sheet 22 or 131 has been re-issued due to problems some contractors have had opening the electronic CAL files.
- 2) Drawing file number 8008-111022, Drawing **A-103**, sheet 23 or 131 has been re-issued due to problems some contractors have had opening the electronic CAL files.

Specifications

The following SPECIFICATIONS have been **REVISED but not REISSUED** as indicated below.

- 1) **ADD** Paragraph 19 as it appears below to section **00800** and make pen and ink change to index;
 - a) **"19. PARTNERSHIP IMPLEMENTATION PLAN.** To more effectively accomplish this contract, the Government proposes to form a partnership with the Contractor. This partnership would draw on the strengths of each organization in an effort to achieve a quality product within budget and on schedule. This partnership would be bilateral in make-up and participation by the Contractor is required. A professional facilitator will not be hired (retained) for the conferences, provide all workshop materials, or compile and distribute a completed partnering agreement. The initial partnership conference, and if required, all subsequent conferences will be facilitated by the Government representative and held at Government facilities. For each conference the Government and Contractor will jointly prepare the agenda, and the Contractor will prepare and distribute minutes within 48 hours of the conclusion of each conference."
 - b) Paragraph 13, a: **REPLACE** the words "Composite Medical Facility Replacement" with "FY05 Dormitory Replacement" where it appears in this paragraph.
 - c) Paragraph 21.b: **DELETE** the table that appears in this paragraph and **REPLACE** it with the following:

<u>"Item No.</u>	<u>Description</u>	<u>Quantity</u>
1.	POL Products	Arctic Diesel Fuel Mogas Lubricant Oil SAE 10W30 Gear oil Hydraulic oil HDO, 10 & 30 Antifreeze <u>POL products will be</u>

		<u>furnished to the Contractor from Government supplies at Thule at no cost.)</u>
2.	Arctic Parkas	One per person. <u>See paragraph 48 of this section</u>
3.	Arctic Gear, other than parkas	Provided by Contractor. See Paragraph 48 of this section.
4.	Aggregate for concrete work	Provided by Contractor"

d) Paragraph 43, c: **DELETE** the first sentence of this paragraph and **REPLACE** it with the following: "Fuel products, oil and lubricants as required for Government -furnished equipment and Contractor-owned vehicles and equipment used in the performance of this Contractor will provided by the U.S. Government at no cost to the Contractor."

2) **CHANGE** the following text in section **01355a ENVIRONMENTAL PROTECTION:**

a) Remove from Paragraph 3.8 INTEGRATED PEST MANAGEMENT, "Project Pesticide Coordinator (PPC)"

3) **CHANGE** the following text in section **02220 DEMOLITION:**

- a) Remove the 3rd sentence from Para. 3.1.1, "Basement slabs shall be broken up to permit drainage."
- b) Remove Para. "3.1.3 Patching" in it's entirety.

4) **CHANGE** the following text to section **09510 ACOUSTICAL CEILINGS:**

- a) In para. 2.1.1 after "Nominal Size: 24 x 24 inches." **ADD** "3/4 inch thick."
- b) **REMOVE** para. 2.1.2 in it's entirety.
- c) In para. 2.4 **REPLACE** "Panel shall be not less than 200 by 300mm or more that 300 by 600mm" with "Panel shall be not less than 300mm by 300mm or more than 600mm by 600mm"

5) **CHANGE** the following text in section **13851A FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE:**

- a) In Para. 1.1 remove the reference to "NFPA 1999" and replace with "NFPA 2002."
- b) In Para. 1.4.1 remove "Alarm initiating devices shall be connected to initiating device circuits (IDC), Style B, to signal line circuits (SLC), Style 5, in accordance with NFPA 72" and replace with "Alarm initiating devices shall be connected to initiating device circuits (IDC), Style D, to signal line circuits (SLC), Style 6, in accordance with NFPA 72."

6) **CHANGE** the following text in section **13920A Fire Pumps:**

- a) In Para. 2.6 Fire Pump, replace "Pump capacity shall be rated at 100 liters per second with a rated net pressure of 56 kPa" with "Pump capacity shall be rated at 28.4 psi (450 gpm) with a rated net pressure of 275.8 kPa (40 psi.)"

7) **CHANGE** the following text in section **13930A WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION:**

- a) In Para. 1.2.1.2 Basis for Calculations, **REPLACE** "The design of the system shall be based upon a water supply with a static pressure of 620 kPa, and a flow of 57/ps at a residual pressure of 331 kPa." with "The design of the system shall be based upon a water supply with a static pressure of 620 kPa, and a flow of 56.7 lps at a residual pressure of 331 kPa."
- 8) CHANGE** the following text in section **13975N STANDPIPE SYSTEMS:**
- a) In Para. 1.4.3 Water Supply, **REPLACE** "Base hydraulic calculations on a static pressure of 620 kPa with 571 L/m available at a residual pressure of 311 kPa at the junction with the existing water distribution piping system" with "Base hydraulic calculation on a static pressure of 620 kPa with 56.7 psi available at a residual pressure of 331 kPa at the junction with the existing water distribution piping system."
- 9) CHANGE** the following text in section **16415A ELECTRICAL WORK, INTERIOR:**
- a) **DELETE** paragraphs 2.16-Non Metallic Sheathed Cable, 2.1.9-Mineral Insulated Metal Sheathed Cable, 2.1.10-Flat Conductor Cable, 2.1.11-Tray Cable or Power Limited Cable, 3.18.4.1-Medium Voltage Cable Tests, 3.18.5-Metal Enclosed Bus Duct Tests and 3.18.7.1-Circuit Breaker tests, Medium Voltage from this section in their entirety.
- 10) CHANGE** the following text in section **16710A PREMISES DISTRIBUTION SYSTEM:**
- a) In Para. 2.2.2, **REPLACE** "Cable shall be rated CMG or CMP, as appropriate, per NFPA 72" with "Cable shall be rated CMP, as per NFPA 72"
- b) In Para. 2.2.3.3, add the following sentence: "Provide 1.5 times the number of 4 pair cables terminated on the patch panels for the communication closet ends and 1.5 times the number of telecommunication outlets at the user end."
- 11) ADD** the following text in section **15556A FORCED HOT WATER HEATING SYSTEMS USING WATER AND STEAM HEAT EXCHANGERS:**
- a) In Para. 2.9.1, **ADD** the following sub-paragraph: "d. Provide units with modulating capacity valves and controls suitable for connection to the DDC control system for the purpose of automatically adjusting the output of the units through a signal from the DDC system."
- 12) CHANGE** the Steam-To-Water Heat Exchanger System DDC points list at the end of section **15951A DIRECT DIGITAL CONTROL FOR HVAC:**
- a) Add an analog output from the DDC control system to the "VALVE" column in the "HWS temp" row and add a note in the "NOTES" section of that row which reads "HWS temp to be adjusted per the final sequences of operation which are to include automatic outside air temperature reset."
- 13) DELETE** paragraph 1.2, Unit Prices and all subparagraphs to 1.2 from **Section 02217A** without replacement.

The following SPECIFICATIONS have been **REVISED AND REISSUED.**

- 1) Section **13280A ASBESTOS ABATEMENT** has been reissued in it's entirety.
- 2) Section **13282N LEAD IN CONSTRUCTION** has been reissued in it's entirety.

- 3) Section **01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS** has been re-issued in its entirety.

The following SPECIFICATIONS have been **DELETED** in their entirety **WITHOUT REPLACEMENT**:

- 1) Section **13100A LIGHTNING PROTECTION SYSTEM.**
- 2) Section **11401N KITCHEN EQUIPMENT.**
- 3) Section **12320A RESIDENTIAL CABINETS AND COUNTERTOPS.**
- 4) SECTION **00901 SUMMER PORT OPERATIONS**
- 5) SECTION **00902 TRANSPORTATION FACILITIES AND ACTIVITIES REIMBURSABLE EXPENSES**

OTHER DOCUMENTS TO BE ADDED TO THE CONSTRUCTION DOCUMENTS

- 1) CID/SID PACKAGE

The **Comprehensive Interior Design (CID) / Structural Interior Design (SID)** package will be issued as part of this addendum. The scope of work to be performed in this contract is limited to the items contained in the SID portion of this document. The SID is a component of the overall CID package. Items that are part of the CID but not the responsibility of the contractor have been removed from the document whenever practical for bidding purposes. The table of contents reflects these changes to the complete CID package.

Items that **ARE NOT** part of this contract include but are not limited to: Furniture, linens, artwork, table lamps, cookware etc..

Items that **ARE** part of this contract and the responsibility of the contractor to purchase and install include but are not limited to: Drapes, curtain Rods, Blinds, fixed mirrors, towel rods, toilet paper holders, corner guards, appliances, floor coverings, wall coverings and light fixtures.

- 2) GEOTECHNICAL REPORT

The geotechnical report titled "**Thule FY05 Dormitory Replacement, Geotechnical Investigation, Thule Air Base, Greenland**" dated July 2004 is included with this addendum.

BIDDER'S QUESTIONS AND GOVERNMENT REPLY

(Questions that may be of general interest of all bidders/Government and that are not readily answered by the proceeding changes will appear below. These questions may have been paraphrased or altered to represent several questions regarding the same subject and/or clarify and simplify the question(s). Questions and answers are issued to the Offerors/Bidders for information only.) Questions appear in NORMAL type-face and the response follows in **BOLD** type-face.

Responses to questions that require further clarification will be found in the main body of the addendum above.

Question Set A

- 1) Could we extend the time with 2 weeks before response and bid opening? **Response (R): Given the demand of all perspective bidders/contractors, the Government has extended the bid opening date.**
- 2) We can't open and print Drawings A102 and A103, please resubmit the drawings. **R: Several diskettes were examined and the Government experienced no problem opening A-102 and 103; however, it was noted that a small problem was encountered with printing A-102 and 103. This can be corrected in several ways, but it is easily fixed by first selecting one of the subject files and then going to "File" at the top right of the screen, selecting "Fit page to printer" and then pressing "Print." The file should print properly.**
- 3) Will there be heated storage area for sensitive materials as paint, glue etc.? **R: Both heated and unheated storage is very limited at Thule AB. Specific amounts and location cannot be determined at this time; however, the Government will work with the Contractor to make reasonable amounts available for the contractor's use.**
- 4) Will you please mail the full text in the clauses about Bid Bond and performance Bond? **R: In this instance, full text will be provided for these clauses; however, bidders are advised that the solicitation provided a website at which full text may be obtained for all contract clauses. The full text version of the following FAR, DFARS, AFFARS and AFSPCFARS clauses are now available on the Internet at the following addresses:**

<http://farsite.hill.af.mil>

OR FOR FAR ONLY PROVISIONS/CLAUSES

<http://www.arnet.gov/far/>

OR FOR DFARS ONLY PROVISIONS/CLAUSES

<http://www.acq.osd.mil/dp/dars/dfars/dfars.html>

- 5) Section 00800, Government Furnished Services. (2) c. Item one tells meals at no cost to the contractor! Later in the same section Government asks for payment for all meals. **R: Paragraph 43.c of Section 00800 has been revised to correct this discrepancy, meal cards must be paid for.**

Question Set B

1. Who will remove stored materials inside existing Bldg. 103 and if by contractor where to restore/dispose the materials? **R: Building contents and their removal is the responsibility of Thule AB.**
2. Sec 00800 par. 13.C: There is made ref. to a composite medical facility; Please clarify. **R: Section 00800 has been revised to correct this discrepancy.**

3. Sec 00800 par. 21.b & 43: Since no rates are given for POL products, can it be assumed that POL can be obtained at no cost to the contractor from Government Supply? If not, please provide percent rates and, is POL for the Area Engineer's vehicle to be provided by the Contractor or the Government? **R: Section 00800 has been revised in the preceding to correct this discrepancy.**
4. Sec 00800 par. 31.4(4): Is submission of payroll a requirement for contracts in Greenland? **R: The submission of payroll is NOT a requirement for work at Thule.**
5. Sec 00800 par. 43 (2) c: First line calls for no cost for meals, but there is also a sentence "The Contractor will not be Issued Free Meal Cards." Please clarify. **R: Section 00800, paragraph 43.c has been revised to correct this discrepancy.**
6. Will the contractor be given some sheltered storage space; heated/unheated? **R: Both heated and unheated storage is very limited at Thule AB. Specific amounts and location cannot be determined at this time; however, the Government will work with the Contractor to make reasonable amounts available for the contractor's use.**
7. Sec 00800 par. 26.b.: Is the secured area GFM or is It provided by the Contractor. If by Contractor, how big and where? **R: The contractor is not responsible for providing a secure field office for the Government's use. The contractor is only responsible for providing the equipment listed for the Governments use.**
8. Sec 00901 who is 1012 ABG and what impact does this section have on this upcoming contract? **R: This section is deleted in its entirety.**
9. Sec 00902:
 - a) Again what is 1012 & 1015 ABG? **R: This section is deleted in its entirety.**
 - b) Off/on loading charges for vessels Ref par, 1.1.3 a (1) + (2). Are the charges to be paid by the Contractor for both own and US Army COE Vessels or are the costs included in the shipping cost given in the bid schedule for US Army COE vessels. **R: This section is deleted in its entirety.**
10. Sec 01320A: Can Microsoft project be accepted as a scheduling tool? **R: Yes, provided the software is made available to the Government for its own use and all specified reports and sorting features are provided as specified.**
11. Sec 01452: Why use a spec. sec. that has been deleted from the UFGS system? **R: This specification is currently enforced within the New York District (NYD)**
12. Sec 02217A par. 1.2: Will payment be made in addition to the RFP contract? **R: The section has been revised to delete all unit pricing and payments for same.**
13. Sec 02217A par. 3.5.3: will temporary soil insulating using insulating mats be allowed in lieu of using soil as an Insulator? **R: Insulating mats are acceptable provided that equal insulation capacity is achieved.**

14. Sec 02220: Will deposit be allowed at the Base landfill or are demolished materials to be deposit outside U.S. Government property (sailed to DK or US)? **R: The Base landfills are available for disposal of demolition and construction waste and asbestos; however, hazardous material (e.g., by products of construction, construction equipment, etc.) must be retrograded from Thule at the Contractor's expense.**
15. Sec 02300 par, 3.3:
- a) Please state the location of the Borrow Pit. **R: The Government has no specific borrow sites; however, there is an abandoned quarry off site (approximately 2 KM) that contains unprocessed aggregate. More specific instructions will be provided after award.**
 - b) Where to deposit unsatisfactory excavated fill? Is it really the intent that surplus materials shall be shipped to DK or US? (Ref. par. 3.15) **R: Unsatisfactory excavated fill may be disposed of in an area on the south side of the Air Base runway, approximately 10KM from the site. Specific instructions will be provided after award. SECTION 02300, PARA 3.15 to be revised in forthcoming addendum.**
16. Sec.02722:
- a) Where is crushed aggregate base course to be used? Is it the same as NFS material? **R: The gravel parking area and the gravel access road will be surfaced with a classified aggregate which depending on the gradation may be a NFS material.**
 - b) Ref. par. 3.2: Is it the intent that all materials shall be imported (shipped to Thule) or can the Contractor crush his own aggregate by using materials from the existing quarry or from a borrow pit at BMEWS? **The Government has no specific borrow sites; however, there is an abandoned quarry off site (approximately 2 KM) that contains unprocessed aggregate. More specific instructions will be provide after award.**
 - c) Ref. par. 1.3: Will the material be paid for in addition to the RFP contract amount. **R: The cost of the NFS material is not an additional cost to the contract amount.**
17. Sec. 03200A: Will reinforcement conforming to "Danish Standard" be allowed, provided same properties as ASTM. **R: Yes, Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified. Material properties to meet or exceed ASTM standards. Reinforcement, size, extent, and orientation to be consistent with the contract documents (exceed ASTM standards.)**
18. Sec 03307A: What is the required Air Content? **As noted on S-001 of the contract documents, reinforced concrete note 5.A reads, "AIR ENTRAINMENT: 5% TO 7% IN CONCRETE EXPOSED TO FREEZE/THAW."**
19. Sec 03415A: What is the required Air Content? **As noted on S-001 of the contract documents, reinforced concrete note 5.A reads, "AIR ENTRAINMENT: 5% TO 7% IN CONCRETE EXPOSED TO FREEZE/THAW."**

20. Sec 05120: Will "European" spec for steel be accepted, provided it is equal or better? **R: Yes, Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified. Geometric properties must be met to provide required design performance of the original steel and physical dimensions must be verified to coordinate with space and construction demands. Also, member weights must be maintained because the current design is based upon existing member self weights for both support of the members and the vibration dampening qualities of the floor framing.**
21. Sec 06650 par. 1.7: Is it really the intent that a full size sample shall be submitted for final approval and, if yes, where to send to. **The contractor will be responsible for providing a full size "mock-up" of the typical vanity top countertop as outlined. Samples will be mailed to Corp of Engineers resident office. The sample, if accepted may be incorporated into the construction.**
22. Sec 07410 N:
- a) Why use and outdated from the UFGS system spec. section? **R: This section was still active at the time of design for this project and should be considered valid.**
 - b) Ref. par. 1.7: What is the meaning of "According to Contract"? **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
 - c) Sec 07840: Will training/qualification of personnel after Danish Standards be accepted? **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
23. Sec 08210: Will Doors/Frames certified after Danish rules but the same rating as US Doors be accepted? **R: Yes, Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified.**
24. Sec 08560 par. 1.2: Is it really the intent that one full size window of each size shall be submitted as a sample, if so where to send them to and who to send them to Thule? **R: Yes. However, if accepted, it may be incorporated into the building construction.**
25. Sec 09510 par. 2:
- a) Where is Ecophone Focus E or Hygiene Advanced to be used? Please note the Hygiene Advanced is an Exposed Grid System. **R: Refer to the changes that have been implemented to this section in the Addendum above.**
 - b) Access panels ought to be 24" x 24" and not 300 x 300 mm. **R: There are two sizes of access panels found in the ceiling of the Dorm. The 1st, 2nd, and 3rd floors have 300MMx300MM access doors located at various points where access to mechanical equipment or controls is necessary. The 3rd floor also has 600MM x 600MM access doors in locations that allow a person to gain access with a ladder to the walkable surface located in the attic.**

26. Sec 10440 par. 1.3: Will the SID submission be made available prior to bidding date? **The CID (Comprehensive Interior Design) package will be sent to all contractors bidding on this project. The SID (Structural Interior Design) package is a component of the CID. The contractor will be responsible for included the cost of the items contained in the SID in their bid. The remaining items contained in the CID package are not part of this contract.**
27. Sec 12320A: Will cabinets manufactured in Denmark be accepted provided they are equal or better than the specified? **R: Yes Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified.**
28. Sec 13100A:
- a) This section ought to be deleted since otherwise this will be the first facility at Thule, which has lightning protection. There have never been recorded any lightning at Thule. **R: The Building does not require Lightning Protection. This section shall be deleted from the specifications. Refer to body of the addendum above.**
 - b) If protection is still wanted then all ref. to ground-rods are to be deleted. Ground-rods are not used at Thule. (Resistance ~ Rod Ground > 30000 Ohms). **R: The Building does not require Lightning Protection. This section shall be deleted from the specifications. Refer to body of the addendum above.**
29. Sec 13280A, par. 1.5.2.1: Can the Base Asbestos landfill be used for disposal of Asbestos containing material. If yes, who to maintain the disposal site? **R: YES, asbestos containing material can be disposed of at the Base Asbestos landfill. Thule AB is responsible for maintaining the asbestos landfill.**
30. Sec 13282 par. 1.1.3: Will a copy of the "Thule AB lead Paint Operating and Management Plan" be made available prior to Bidding? **R: No**
31. Sec 13920A:
- a) There are big differences between the spec and drawing F 601. **Refer to the changes that have been implemented to this section in the Addendum above.**
 - b) Please note that the flow/pressure calculations on drawing F 601 are no longer valid since this summer there has been installed a new and bigger waterline from the main pump station to Bldg 103. New flow test to be conducted with and without the main fire booster pump running. **R: The design team was given the flow data to base their design and for the contractor to use for their hydraulic calculations. As stated in the construction documents, the contractor is required to perform their own flow/pressure test.**
 - c) There ought to be a pressure maintenance relief installed across the fire pump preventing the fire pump to stop at 862 kpa, after stop the pump will start up again. **R:**

Relief valves and circulating relief valves are specified. The pressure maintenance pump shut off pressure should be set higher than the fire pump shut off.

- d) There is a conflict on drawing F601: The sprinkler system not to be connected to the pump system, but the pump to be sized for both the sprinkler and stand pipe system?
R: The sprinkler system should be connected to the fire pump system. The fire pump size is based on the higher demand of the two systems, which is the standpipe system.
 - e) Please clarify and revise spec. drawing F 601. **R: Refer to the changes that have been implemented to this section in the Addendum above.**
32. Sec 13920A: Please provide a revised flow test to be used for sizing the sprinkler system.
The flow test data as stated on the drawings is the most current.
33. Sec 13975N: Please provide a revised flow test to be used for sizing the stand pipe system.
The flow test data as stated on the drawings is the most current.
34. Sec 15400A:
- a) Will Danish plumbing fixtures (incl. tank type toilets) be accepted? **R: Yes Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified.**
 - b) Will hot water storage tanks bearing the Danish certification approval/stamp be accepted? **R: Yes Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified.**
35. Sec 15556A par. 1,15.1:
- a) Where is the chemical shot feeder shown/installed or is this the same as shown on drawing. M 501 and called "Glycol Fill station"? **R: See detail 1 on drawing M501.**
 - b) Will Danish Malleable iron fittings be allowed? **R: Yes, Danish or other countries listed in 252.225-7045, Balance of Payments Program – Construction Material under Trade Agreements, unless otherwise excluded, may be used as sources, provided they meet or exceed the minimum requirements specified.**
36. Sec 16415 par. 3,1.1: Ground rods are not used at Thule: Please advise. **R: Ground Rods are not used.**
37. Sec 16711A: Who to terminate the cable at Bldg, 287? **R: The Thule Comm. department will terminate the cable at Building 287.**

38. Sec 16713A: Who to terminate the cables In Bldg. 113? **R: The Thule Comm. department will terminate the cable at Building 113.**
39. Will the contractor be permitted to receive mail via APO? **R: Under the following circumstances, yes: a) The individual is an U.S. citizen; b) A U.S. Firm, or; c) If it official U.S. Government correspondence and it is addressed care of (C/O) the U.S. Army CoE resident engineer. All other mail must be sent through other means.**
40. Telephone and data connection is mentioned available from Tele Greenland. Do they (Tele Greenland) have sole source monopoly for Thule defense area or are contractors allowed to get data from Contractor furnished satellite communication? **R: This phone service or services mentioned are not subject to this contract agreement. The contractor is solely responsible for obtaining or contracting for his or her phone services.**
41. Please provide price for containers from/to Danish port. **R: For shipments originating from/to Denmark contact: Ms. Helle Christensen, Transportation Assistant, Commercial Phone: (45) 99 30 32 26, Fax: (45) 99 30 30 90, E-Mail: hch@ral.dk. Delivery Address of cargo: Royal Arctic Line, Gronlandshavnen. P.O. Box 8100, 9220 Aalborg Ost.**
42. What is the address for Danish bidding? **R: The Bid opening will be held in conference room M3 of the Ministry of Foreign Affairs.**
43. Is Panel Locking Cam mandatory? Please provide name and address for at least 3 vendors. **Yes, the locking cam system is critical to ensure that these panels maintain a tight seal and the vapor barrier that they serve as is not compromised. The manufacture that the design was based on is listed in the specifications. Two additional manufacturers will be listed in the forthcoming addendum.**
44. Are Performance and Payment Bonds required? If so, then what percentage of award cost and when will they be released? **R: Amendment #1 addresses percentage required. The performance bond may be released upon completion of the project, expiration of the warrantee period, OR the Contracting Officer determination. The payment bond may be released 1 year after acceptance of the project.**
45. Equal Opportunity Pre award Clearance of Subcontracts. Is this clause applicable for DK sub contractors? **R: No, it does not apply to DK sub-contractors.**
46. Section 00800, page 52; Exterior work may commence on or about 15 June. Is this a restriction? **R: It is not intended as a restriction; however, the sub-station will not be relocated by the Government until this date.**
47. Section 00800, page 67; Cargo Costs: What Is one LB? **R: LB = one pound.**
48. Section 00800, page 66; What is the cost of one way ticket on the MAC charter from CPH to TAB? **R: Military airlift is only available from McGuire or Baltimore to Thule AB.**

49. Section 00902: Please confirm that rates on schedule 1 and 2 are still correct for this upcoming shipping season. **R: Section 00902 has been deleted from the specification. Refer to the body of the addendum above.**
50. Who to relocate the Sub station? **R: The sub-station will be relocated by the Government or another Government Contractor.**
51. Drawing C 104: The sloped surface at the piers is not needed since NFS does not provide surface drainage. Please advise. **R: Surface drainage away from foundation piers is necessary to avoid the potential for ponded water that can increase thermal degradation of the permafrost**
52. Drawing C 105 & C 501: The supports shown on C 105 & C 501 are apparently not the same type. Please advise. **R: The utility line support details shown on C-501 are accurate, the plan view of the utility supports shown on C-105 are for information only.**
53. Drawing C 501: Tracer channels for water lines ought to be 10 12 2 o'clock and sewer lines to be 5 & 7 o'clock. Sewer lines only to have 2 ea. heat cables. Please advise. **R: An alternative heat trace channel configuration is acceptable provided that the channel locations are in conformance with Thule Standard Details.**
54. Drawing A 203: Is a silver colored roof in compliance with the Base Facility Excellent Plan? **R: The colors for this facility have been approved by HQ Space Command.**
55. More than 30 ea Drawings make reference to additional information in "CID package under separate cover". This CID package is not to be found in the Bid documents. Please provide. **R: The CID package will be issued with this addendum. In general, the contractor will be responsible for the components of the SID portion of the CID package.**
56. The unit heaters mounted in the Mech. spaces ought to be installed in the Attic. Please advise. **R: No, install them as shown. Unit heaters were specifically requested to not be installed in the attic by the U.S. Army Cold Regions Research and Engineering Laboratory (USACRREL) representative during the design process.**
57. Drawing M 501: The spec calls for an outside temperature Reset system. This is not possible to obtain with the control equipment shown for the SHX 1,2. If the "condensate level and heat exchanger control valve" is replaced with a modulating electrical operated control valve connected to the DDC system. Please advise. **R: Per the heat exchanger manufacturer, the output of the SHX units can be modulated by adjusting the setting of the temperature control valve, which in turn, controls the unit condensate level, which adjusts the output of the units. We agree that as currently specified, this cannot happen automatically. Refer to the body of the addendum above.**
58. DWG M-601: Please note that the capacity of the OM6U heat exchangers (SHX-1,2) with clean tubes are rated at 280 kW and by rule of thumb the fouling factor is 25 % given an output = 225 kW. The unit ought to be an OM8U. Please advise. **R: QUESTION HAS BEEN WITHDRAWN BY THE CONTRACTOR.**

59. Drawing M 701 General Note 2: Please provide a coordinated and approved control sequence. **R: The operational needs of the base engineers were not able to be obtained and coordinated during the design process. The HVAC systems in this building run continuously so there will not be many complicated operational sequences. The Contractors/Control Suppliers are to include time and effort, and the associated costs, to work with base personnel to develop the detailed sequences of operation while referencing Section 15951A including the points lists attached to same, as well as the M drawings, and all applicable specification sections.**
60. Drawing M 701 General notes 3 & 4: What is the purpose of humidity sensors since we do not have humidifiers installed? **R: Humidity sensors just added to be able to monitor humidity.**
61. Drawing E 104, Key note 4:
- a) PVC conduit is never used outside at Thule AB since it becomes very brittle at 401. Rigid conduit is normally used. **R: Use rigid conduit.**
 - b) Cables Installed by Base Comm. Dept. We take for granted that all work (procurement, supports, etc) is done by the Comm. Dept. Please confirm. **R: Yes, all work for the cables that are installed by the Comm. Department is done by the Comm. Department.**
62. Drawing E 502 Panel Board HT1: Please note that C,B. for heat trace ought to be 30 amp in lieu of 20 amp. Please advise. **R: The 20 amp circuit breaker for the heat trace is based on 33 watts/meter and the distance is less than 100 meters. Provide 20 amp circuit breakers.**
63. Drawing E 601: Is It mandatory that the main switch for MDP is a fused disconnect? **R: Yes, the main switch for the MDP should be a fused disconnect.**
64. Drawing F 101: Is it the intent that each floor have its own sprinkler zone with and alarm switch for each floor? **R: QUESTION HAS BEEN WITHDRAWN BY THE CONTRACTOR.**
65. Drawing F 601:
- a) Where to connect the sprinkler feed pipe before the pump? **R: QUESTION HAS BEEN WITHDRAWN BY THE CONTRACTOR.**
 - b) As shown we will need 2 ea FDC (one for standpipe & one for sprinkler). Only one is shown. Please indicate location of the FDC for the sprinkler system. **R: QUESTION HAS BEEN WITHDRAWN BY THE CONTRACTOR.**
66. Sec 02722A par. 3.5.7: Please note that if this Item is maintained, the contract cost will be increased with an amount in exceed of 1 million US \$. Is it possible to delete this requirement. This requirement is not normally used for building sites at Thule, but only for road & runway systems. Please advise. **R: Proof rolling requirement for the final surface can be replaced by providing compaction with locally available equipment provided that compaction specifications are maintained. Section 02722A will be revised in the forthcoming addendum to address the proof rolling requirement.**

67. Section 02722A: In our opinion the entire section ought to be omitted since this is a specification for "Base Course for Flexible Pavements." Replacement section ought to be 02315N "Site Construction Excavation and Fill." Section 02722A does not have a reference to NFS and NFS is mentioned on the drawings and is what is required for the work. Please advise. **R: The gradation requirements of NFS fill are outlined in section 02217A and specified in detail 4, sheet C-104. The classified aggregate will be used as surface coarse for the gravel parking area and the gravel access road.**
68. Drawing C-102 and C-103: Is limits of disturbance equal to the contractors area site limits during the duration of the contract? If not then what are the limits then?
R: Yes, however, additional areas for layout may also be made available to the contractor after award, should they become available.
69. Drawings will be submitted in AutoCAD. What version of AutoCAD? **Version 2004 or later.**
70. Section 15400A and drawing M-501 + P-501: The capacity of 234KW for the hot water heater seems to be on the very high side and the manufacturer regards a 700 l tank (185 GAL) with a 234 KW heating element as an heat exchanger with no virtual space for the hot water – a heating capacity of 234 KW cannot be guaranteed. A 200 l stainless steel tank, with an effective volume of approximately 1100 l and a 120 KW heating element may be more amiable. Please advise. **R: The base specifically requested a smaller than normal tank size so that flow velocities through the tank are higher, so as to help eliminate solids settling out. This is why the system is designed as it is. During design, we received a general piping diagram from the manufacturer that showed a 700 liter tank with a 270kw heat exchanger, and we received a copy of a quote for another project that listed these same conditions. Based on these facts, we see no reason to not bid on the heater as specified. The design was based on Kahler Breum out of Denmark.**
71. Drawing E-502: Vehicle black heater connection is shown as a receptacle. At Thule the male plug is mounted at the vehicle without a cord. Please advise. **R: You are correct. Provide receptacle with enough slack cord to reach car plug. Refer to the body of this addendum above.**
72. Drawing E-104: Is it the intent that the CAT6, SMF, MMF and CATV are to run exposed in the parking and picnic areas? Please Advise. **R: The cables shall run in conduit beneath the parking and picnic areas as illustrated on the drawings.**
73. Drawing E-001: 1) Legend for CATV and Telephone/data are the same. 2) What does the abbreviation "ACT" stand for (Telephone/data outlet)? 3) Is it the intent that cables are procured and installed by others for phone and data since the contractor is to install pull wire in the conduits? Please advise. **R: "ACT" refers to "Acoustical Tile Ceiling". The contractor is to provide the cabling indicated and in addition to the cables, a separate conduit is to be installed with a pull string for future cabling.**
74. Drawing E-401: Is the mentioned "door switch" a "special" switch? If not, can an occupancy sensor be used in lieu? Please advise. **R: A door switch is a switch mounted in the doorjamb and is and the light is activated by the opening and closing of the door. An occupancy sensor can be used in lieu of the door switch.**

75. Drawing M-501: The steam to the hot water generator ought to be reduced to 1 bar or a flash tank/condensation cooler to be installed. Please advise. **R: Base personnel requested that the steam pressure not be reduced as you suggest, the heat exchangers were selected accordingly, and the installation and condensate return system will be as is commonly used on base.**
76. Please disregard our question of where to connect the sprinkler system. **R: Noted.**
77. Drawing B-601: The borehole profiles are useless, unless scale or levels are known. Please provide. **R: Drawing B-601 is to be re-issued with the Addendum. This will contain all relevant information typically contained in borehole profiles.**
78. Drawing E-401: what is the meaning of the abbreviation "GAC"? **R: GAC" is defined on the Symbol List on E-001 as "A GFI receptacle mounted above counter".**
79. Furnishing (CID): since no specification is given for folding table, mirrors outside of toilets, window drapes, art work, furniture, vending machines, range hoods and clothes dryers, can it be taken for granted that this material are to be furnished under a separate CID package contract? **R: Refer to the CID package included with this Addendum.**
- a) Please provide a better specification for the washing machines, if included in this bid, ref. drawing P-602 item WM-1. **R: Refer to the CID package to be included with this Addendum.**
- b) Is it correct that no range (hot plates) and range hoods are provided in the JNCO and SNCO unit kitchens? **R: That is correct. No ranges are to be included in the SNCO and JNCO kitchens. The modules will have a countertop microwave ovens. Refer to the CID package included with this Addendum.**
80. Project table of contents page 4 : There is no listing of a section 11401N (Kitchen Equipment) and section 12320A Residential Cabinets and Countertops but they are included later in the Specifications. Does that mean that this specified material is not to be included in this contract? Please advise. **R: These sections have been removed. Refer to the body of the addendum above.**
81. Ref. our prior question 3: Please delete "pre-cent" and reinstate "percent". **R: Noted.**
82. Ref. Our prior question 32.4: Please delete "F6D1" and reinstate "F-601". **R: Noted.**
83. Ref. Our prior question 58: Please add before "please advise"; "Then the system can work as an outside temp. reset temperature system." **R: Noted.**
84. Ref. Our prior question 59: Please delete entire question and reinstate "DWG M-601: Please note that the capacity of the OM6U heat exchangers (SHX-1,2) with clean tubes are rated at 280 kW and by rule by thumb the fouling factor is 25 % given an output = 225 kW. The unit ought to be an OM8U. Please advise." **R: We should have a minimum of about 8.75 % (245kw/280kw) safety and the base's experience with these units is that they perform very well year after year without losing capacity. Also, we have a backup unit in case one unit gets fouled. We do not see a reason to change.**
85. Ref. Our prior question 63: Please delete "C.V" and reinstate "C.B". **R: Noted.**

86. Ref. Our prior question 65: Please delete the question. **R: Noted.**
87. Ref. Our prior question 66: Please delete the question. **R: Noted.**
88. Ref. Our prior question 74: Please delete “conductors” and reinstate “conduits”. **R: Noted.**
89. Drawing M-601: We can not locate a water fired unit heater with a capacity of 1200 W. Please advise min. 3 vendors/manufacturers. **R: American manufacturers shall be Sterling, Trane, and Dunham-Bush.**
90. Drawing F-101 : Area calculations i.e. “359664 sq. mm (1180 sq. ft.)” Since 1 sq. ft. = 92900 sq. mm there must be a calculation mistake somewhere? Please provide the calculations in sq. meters. **R:**
- | | |
|-------------|--------------------------------|
| JNCO | 1180 SQ. FT. = 109.7 M2 |
| | 850 SQ. FT. = 78.97 M2 |
| SNC0 | 825 SQ. FT. = 76.64 M2 |
| | 570 SQ. FT. = 52.95 M2 |
91. Section 13930A par. 1.2.1.2: It is stated that the calculation of the sprinkler system shall be based upon the fire pump running but drawing F-601 calls for “No fire pump required for sprinkler demand”. Please clarify. **R: Fire pump is sized for the greater water demand between either sprinkler or standpipe system.**
92. Drawing C-104: We cannot find any manufacturer who can supply 275 kPa long term Rigid Poly insulation. 275 kPa seems also to be on the high side since this is more than the allowable specific pressure for NFS. In our opinion 75-100 kPa long term will do. Long term = 50 years. Please advise. **R: 75-100 kPa (10-14 psi) rigid insulation is not acceptable. 275 kPa (40 psi) is manufactured by Owens Corning and Dow.**
93. Lead Paint Abatement :
- a) It is not possible to find the quantities of lead painted areas based on the solicitation drawings and specification. Please provide m² for each of the colors and material (steel, concrete, wood/timber). **R: Not needed. Based upon the age of the building and sampling, there are some painted materials that could be identified as lead-based paint (LBP). However, no on-site abatement of individual painted components is planned. The building should be demolished with paint in-place. The Contractor should be aware of the paint (lead-based or lead-containing) during the demolition activities. The Contractor is responsible to perform work according to all applicable regulations or laws. Furthermore, a composite sample of the various painted building components was obtained from the building. The sample was obtained for the purpose of characterizing the construction debris that will be generated during the demolition activities with respect to the disposal requirements of the painted items (i.e., hazardous or non-hazardous). The anticipated waste stream was characterized for leachable lead through toxicity characteristic leaching procedure (TCLP) analysis. The TCLP results did not exceed the criteria for leachable lead. Based upon the results, the demolition waste from this building would not need to be reported as a hazardous waste in accordance with 40 CFR 261 for hazardous waste. See the Hazardous Material**

Survey Report. The Contractor will be required to confirm this testing prior to disposing of the construction debris as normal construction waste. The Contractor should bid the project based upon this information. In the event that the waste is reported differently at the end of the project, the Contractor will be compensated under special conditions of this contract.

- b) The material is to be taken of island in 208 l. drums. Please confirm that the lead paint contaminated building parts can be dismantled and shipped of island in containers for final treatment. **R: Not needed. Removal of the construction debris should not be considered hazardous material waste, and should be disposed of as normal construction waste. The Contractor should bid the project based upon this information. In the event that the waste is reported differently at the end of the project, the Contractor will be compensated under special conditions of this contract.**
94. Bid guarantee is required. What % or/and USD amount is required? **R: Amendment #1 addresses percentage required.**
95. Section 15400A: Will it be allowable to follow the current specification section 15400? The current revision of section 15400 allows the use of PP pipe as drainage pipe. PP pipe is approved to 100° C and is commonly used at Thule Air Base. Please advise. **R: R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
96. Specification Section 15400A:
- a) Par. 2.2.10 & 2.2.11 describe two different types of toilet tissue dispensers! What type is to be used? **R: Refer to the CID package included with this addendum.**
 - b) Par. 2.2.12: Hooks are specified as "As per construction documents", but are nowhere to be found? **R: Refer to the CID package included with this addendum.**
 - c) The specification section includes grab bar, comb. Paper towel dispenser, waste receptacle, shower curtains, soap dispensers, soap holder and wastebasket, but these materials are not mentioned on the drawings? We take for granted that these materials are not to be included in the bid. Please confirm. **R: Refer to the CID package included with this addendum.**
97. Drawing FA-101 through 103:A note calls for See drawing E-401 for alarm devices and Mass notification system for individual Dwelling units. Placing of the alarm devices and speakers in the units are not found on drawing E-401 or elsewhere. Please advise. **R: Drawing E-401 will be resubmitted in it's entirety. All fire alarm information will be illustrated.**
98. Drawing S-001, Foundations: Note 1 refers to a report from Michael Baker Jr. and to be part of the Construction Documents. This report is nowhere to be found in the present bid documents. Please provide or advise otherwise. **R: The Geotechnical Investigation performed by Michael Baker Jr. will be provided. Refer to the body of the above Addendum.**
99. Specification Section 07410N, paragraph 1.3.2: The values for wind uplift given are exactly the same as for the New Clinic (copy of Specification Section for New Clinic). Please provide new calculated values for New Dorm. **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**

100. Specification Section 07410N, paragraph 1.3.3: The values for wind uplift are exactly the same as for the New Clinic. Please provide new calculated values for the New Dorm. **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**

Question Set C

- 1) Drawing A-514 indicates that all partition in bottom starts from level 150 mm metal floor deck. It is very expensive to start the partition from that level, we need to install a "working floor" and move it to the next level after raising the walls. Drawing A-501 indicates that the partition start from top of the total deck construction. If A-514 is correct, you can't move partition later without big troubles. We propose to start the bottom of the partition from 9.02 on the 2 layers of 13 mm gypsum. **R: This only applies to fire rated walls. This type of wall construction can be found on other buildings at Thule. The design of the walls must follow what is illustrated on the drawings.**

Question Set D

- 1) The drawings indicated that there are two types of external windows: A and B. The windows are insulated aluminum. In contrast, the spec stated that the windows should be from PVC. Which one is correct: aluminum or PVC? **R: The specifications are correct.**

Question Set E

- 1) Re. Standard form 1442:
- State specific requirements for
 - Offer guarantee. **R: Amendment #1 addresses percentage required.**
 - Performance and payment bonds. **R: Amendment #1 addresses percentage required.**
- 2) Item No. 0002:
- Explain in wording the types of work to be included in this item. **R: The Government, for the purpose of tracking cost and planning new facilities, has asked for this break out of the facility cost. It is intended to mean, everything that is not included with the building itself.**
- 3) Item No. 0004AA through 0004AM:
- Can the unit rates be stated by COE in Danish Kroner enabling Danish Offerers to bid in one currency? **R: The conversion of currency is a contractor/bidder responsibility.**
- 4) RE. Section 00800, clause 5.5:
- The exchange rate given in clause 5.5 is not understood. The present commercial exchange rate is app. 5.60 Danish Kroner to 1 U.S. Dollar. Please elaborate. **R: This paragraph clearly states that the conversion is an estimate and that the actual exchange rate at the time of evaluation will be used.**
 -
- 5) Re. Section 00800, clause 41:
- The unit rates per pound stated under b.(1) appear wrong. **R: These are the rates provided by Air Force.**

- 6) Re. section 00800, clause 21 and 43:
- POL-products. Clause 21 states that POL-products will be furnished by the U.S. Government. We understand "furnished" to mean "free of charge." Clause 4.3 states that POL-products will be sold at cost. Please specify the intention. **R: In the preceding, Paragraphs 21.b and 43 of Section 00800 have been revised to correct discrepancies.**
- 7) Non-Frost susceptible material:
- In the synopsis for the product is mentioned: NFS-Material....can be obtained at base." We do not find the conditions under section 00800 or the technical sections. Please explain. **R: Refer to Section 02217A, para. 2.1.5 for definition of NFS.**
- 8) Bid date.
- We ask for a postponement of 2 weeks. **R: Postponed per Amendment #1.**

Question Set F

- Drawing no. E-604 system riser:
 - Please specify installation of 12 speakers on each floor. **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
- Drawing FA-101 to FA-103
 - Please specify 6 speakers on each floor. **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
 - What is the correct number of speakers to be included? **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**
- We have noticed that in the living quarters there is not any alarm devices. Is this correct? **R: GOVERNMENT RESPONSE TO BE PROVIDED IN A FORTHCOMING AMENDMENT.**

SECTION 00010 - SOLICITATION CONTRACT FORM

The required performance has changed from New Dormitory at Thule Air Base, Greenland This Procurement is Unrestricted to bidder's in the United States and Denmark only. All questions should be sent to the Contract Specialist, Norma Smith, via email to norma.j.smith@usace.army.mil Note New Requirement: Bonds, Powers of Attorney, statements of authenticity and continuing validity, and all related documents MUST NOT bear computer printer-generated signatures and/or seals. Documents bearing signatures and/or seals generated as part of a document, as opposed to being affixed to the document after its generation, will not be accepted. Submission of such documents may render the bid or offer non-responsive and ineligible for award. Please review all bonds and accompanying documents required to be submitted. A dual bid opening will be held simultaneously in Denmark and at the New York District, on 6 January 2005, at 10am US, Eastern Standard Time and 4pm Denmark time. Bid opening at the New York District will be held in Room 1841 of 26 Federal Plaza, New York, NY 10278. US offerors are strongly encouraged to arrive early due to security measures at 26 Federal Plaza. Additionally, offerors submitting through mail or carrier should ensure that submittals arrive timely given the security measures mentioned above. to New Dormitory at Thule Air Base, Greenland This Procurement is Unrestricted to bidder's in the United States and Denmark only. All questions should be sent to the Contract Specialist, Norma Smith, via email to norma.j.smith@usace.army.mil Note New Requirement: Bonds, Powers of Attorney, statements of authenticity and

continuing validity, and all related documents MUST NOT bear computer printer -generated signatures and/or seals. Documents bearing signatures and/or seals generated as part of a document, as opposed to being affixed to the document after its generation, will not be accepted. Submission of such documents may render the bid or offer non-responsive and ineligible for award. Please review all bonds and accompanying documents required to be submitted. A dual bid opening will be held simultaneously in Denmark and at the New York.

(End of Summary of Changes)

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

08/04

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI/ASSE A10.34	(2001) Protection of the Public on or Adjacent to Construction Sites
ANSI Z359.1	(1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

ASME INTERNATIONAL (ASME)

ASME B30.22	(2000) Articulating Boom Cranes
ASME B30.3	(1996) Construction Tower Cranes
ASME B30.5	(2000) Mobile and Locomotive Cranes
ASME B30.8	(2000) Floating Cranes and Floating Derricks

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2002) Portable Fire Extinguishers
NFPA 241	(2000) Safeguarding Construction, Alteration, and Demolition Operations
NFPA 51B	(2003) Fire Prevention During Welding, Cutting, and Other Hot Work
NFPA 70	(2002) National Electrical Code
NFPA 70E	(2004) Electrical Safety in the Workplace

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety -- Safety and Health Requirements
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U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

Government acceptance is required for submittals with a "G, A" designation.

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, A

Activity Hazard Analysis (AHA); G, A

Crane Critical Lift Plan; G, A

Proof of qualification for Crane Operators; G, A

SD-06 Test Reports

Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Crane Reports

Regulatory Citations and Violations

SD-07 Certificates

Confined Space Entry Permit

Hot work permit

Contractor Safety Self-Evaluation Checklist; G, A

[Third Party Certification of Barge-Mounted Mobile Cranes]

[Certificate of Compliance (Crane)]

Submit one copy of each permit/certificate attached to each
Daily [Production][Quality Control] Report.

[Machinery & Mechanized Equipment Certification Form]

1.3 DEFINITIONS

a. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

c. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

d. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

e. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, and with extensive knowledge, training and experience in the field of fall protection; who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

f. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work (any time lost after day of injury/illness onset);

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

g. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

- [h. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and/or collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).]

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST

Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and the following [federal, state, and local,] [host nation] laws, ordinances, criteria, rules and regulations [_____]. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person[cannot be the SSHO on this project, even though the QC has safety inspection responsibilities as part of the QC duties.][can be the SSHO on this project.] The SSHO shall meet the following requirements:

- [Level 1:
Worked on similar projects.
10-hour OSHA construction safety class or equivalent within last 3 years.
Competent person training as needed.]

- [Level 2:
A minimum of 3 years safety work on similar project.
30-hour OSHA construction safety class or equivalent within last 3 years.
Competent person training as needed.]
- [Level 3:
A minimum of 5 years safety work on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years.
Competent person training as needed.]
- [Level 4:
A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following [4] areas of competency:
[Excavation]; [Scaffolding]; [Fall protection]; [Hazardous energy]; [Confined space]; [Health hazard recognition, evaluation and control of chemical, physical and biological agents]; [Personal protective equipment and clothing to include selection, use and maintenance]; [____].]
- [Level 5:
An Associate Safety Professional (ASP), Certified Safety Trained Supervisor (STS) and/or Construction Health & Safety Technician (CHST).
A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following [4] areas of competency:
[Excavation]; [Scaffolding]; [Fall protection]; [Hazardous energy]; [Confined space]; [Health hazard recognition, evaluation and control of chemical, physical and biological agents]; [Personal protective equipment and clothing to include selection, use and maintenance]; [____].]
- [Level 6: A
Certified Safety Professional (CSP) and/or Certified Industrial Hygienist (CIH).
A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects.
30-hour OSHA construction safety class or equivalent within the last 5 years.
An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following [4] areas of competency:
[Excavation]; [Scaffolding]; [Fall protection]; [Hazardous energy]; [Confined space]; [Health hazard recognition, evaluation and control of chemical, physical and biological agents]; [Personal protective equipment and clothing to include selection,

use and maintenance]; [____].]

[1.6.1.2 Certified Safety Professional (CSP) and/or Certified Industrial hygienist (CIH)

Provide a [Certified Safety Professional (CSP)] [and] [Certified Industrial Hygienist (CIH)] at the work site to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The [CSP] [and] [CIH] shall be the safety and occupational health "competent person" as defined by USACE EM 385-1-1. [The [CSP and/or CIH] shall have no other duties than safety and occupational health management, inspections, and/or industrial hygiene.]

] [1.6.1.3 Associate Safety professional (ASP), Certified Safety Trained Supervisor (STS) and/or Construction Health and Safety Technician (CHST)

Provide [a/an] [Associate Safety Professional (ASP)] [Certified Safety Trained Supervisor (STS)] [and/or] [Construction Health & Safety Technician (CHST)] at the work site to perform safety management, surveillance, inspections, and safety enforcement for the Contractor. The [ASP][STS] [and/or] [CHST] shall be the safety and occupational health "competent person" as defined by USACE EM 385-1-1. The [ASP][STS] [and/or] [CHST] shall be at the work site at all times whenever work or testing is being performed and shall conduct and document daily safety inspections. The [ASP][STS] [and/or] [CHST] shall have no other duties other than safety and occupational health management, inspections, and enforcement on this contract.

] [1.6.1.4 Competent Person for Confined Space Entry

Provide a competent person for confined space meeting the definition and requirements of EM 385-1-1.

[Since this work involves marine operations that handle combustible or hazardous materials, this person shall be a NFPA certified marine chemist.]

] 1.6.1.5 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or and organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

[Crane operators shall also meet the requirements of the State of Hawaii for Crane certification.

]

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily [production][quality control] report.

- b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
- c. Maintain applicable safety reference material on the job site.
- d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- e. Implement and enforce accepted APPS and AHAs.
- f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
- g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHA, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

[1.6.2.2 [Certified Safety Professional (CSP)][Certified Industrial Hygienist (CIH)][Associate Safety Professional (ASP)][Certified Safety Trained Supervisor (STS)][and/or][Certified Construction Health & Safety Technician (CHST)]

- a. Perform safety and occupational health management, surveillance, inspections, and safety enforcement for the project.
- b. Perform as the safety and occupational health "competent person" as defined by USACE EM 385-1-1.
- c. Be on-site [at all times][at least weekly][at least monthly][_____] whenever work or testing is being performed.
- d. Conduct and document safety inspections.
- e. Shall have no other duties other than safety and occupational health management, inspections, and enforcement on this contract.

If the [CSP][CIH][ASP][STS][CHST] is appointed as the SSHA all duties of that position shall also be performed.

]1.6.3 Meetings

1.6.3.1 Preconstruction Conference

- a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).
- b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of

anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings

Shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily [production] [quality control] report.

1.7 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated CSP and/or CIH.

Submit the APP to the Contracting Officer [15] [_____] calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project

superintendent, SSHO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSE A10.34,) and the environment.

Copies of the accepted plan will be maintained at the [Contracting Officer's] [resident engineer's] office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.7.1 EM 385-1-1 Contents

In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSS, CHSTs. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

[d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.]

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised [every six months] for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

[f. Occupant Protection Plan. The safety and health aspects of lead-based paint removal, prepared in accordance with Section 13281 LEAD BASED PAINT HAZARD ABATEMENT, TARGET HOUSING & CHILD OCCUPIED FACILITIES 13283N REMOVAL AND DISPOSAL OF LEAD CONTAINING PAINT.]

[g. Lead Compliance Plan. The safety and health aspects of lead work, prepared in accordance with Section 13282N LEAD IN CONSTRUCTION.]

[h. Asbestos Hazard Abatement Plan. The safety and health aspects of asbestos work, prepared in accordance with Section 13280 ASBESTOS ABATEMENT 13281N ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS.]

[i. Site Safety and Health Plan. The safety and health aspects prepared in accordance with Section 01351 SAFETY HEALTH AND EMERGENCY RESPONSE (HTRW/UST).]

[j. PCB Plan. The safety and health aspects of Polychlorinated Biphenyls work, prepared in accordance with Sections 13284 REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENALS and 13285 REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS.]

[k. Site Demolition Plan. The safety and health aspects prepared in accordance with Section 02220 DEMOLITION and referenced sources.[Include engineering survey as applicable.]]

[l. Excavation Plan. The safety and health aspects prepared in accordance with Section 02300 EARTHWORK.]

1.8 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least [15][_____]calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.9 DISPLAY OF SAFETY INFORMATION

Within [1][_____] calendar days after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06. Additional items required to be posted include:

- a. Confined space entry permit.
- b. Hot work permit.

1.10 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 REPORTS

1.12.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the Navy Contractor Significant Incident Report (CSIR) formUSACE Accident Report Form 3394 and provide the report to the Contracting Officer within [5][_____] calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

[b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 30 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer will provide a blank copy of the accident report form.]

1.12.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than [

four hours][____], after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.12.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.12.4 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

[1.12.5 Certificate of Compliance

The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used.[For cranes at DOD activities in foreign countries, the Contractor shall certify that the crane and rigging gear conform to the appropriate host country safety standards.] The Contractor shall also certify that all of its crane operators working on the DOD activity have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.

] [1.12.6 Third Party Certification of Barge-Mounted Mobile Cranes

Barge-mounted mobile cranes shall be certified in accordance with 29 CFR 1919 by an OSHA accredited person.

] 1.13 HOT WORK

Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested from the [Fire Division][____]. CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a

minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency [Fire Division][_____] phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE [FIRE DIVISION][_____] IMMEDIATELY.

[Obtain services from a NFPA Certified Marine Chemist for "HOT WORK" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.]

PART 2 PRODUCTS

Not used.

2.1 CONFINED SPACE SIGNAGE

The Contractor shall provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm (one inch) in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 1.52 m (5 feet).

2.2 FALL PROTECTION ANCHORAGE

Fall protection anchorage, conforming to ANSI Z359.1, installed under the supervision of a qualified person in fall protection, shall be left in place for continued customer use and so identified by signage stating the capacity of the anchorage (strength and number of persons who may be tied-off to it at any one time).

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use

Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury

or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material

The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If [additional] material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within [14][_____] calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

3.2 PRE-OUTAGE COORDINATION MEETING

Contractors are required to apply for utility outages at least [15][_____] days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer [and the[Installation representative][Public Utilities representative]] to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM

The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.3.1 Training

The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.3.2 Fall Protection Equipment and Systems

The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are

required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ANSI A10.32.

3.3.2.1 Personal Fall Arrest Equipment

Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.3.3 Fall Protection for Roofing Work

Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.

(2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3.3.4 Existing Anchorage

Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1. Existing horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.3.5 Horizontal Lifelines

Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

3.3.6 Guardrails and Safety Nets

Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 and 29 CFR 1926 Subpart M.

3.3.7 Rescue and Evacuation Procedures

When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

[3.4 SHIPYARD REQUIREMENTS

All personnel who enter the Controlled Industrial Area (CIA) shall wear mandatory personal protective equipment (PPE) at all times. All personnel shall also comply with PPE postings of shops both inside and outside the CIA. PPE shall be governed in all other areas by the nature of the work the employee is performing. They will also use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Mandatory PPE includes:

- a. Hard Hat
- b. Safety Glasses
- c. Safety Toed Shoes

]3.5 SCAFFOLDING

Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold

systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

[3.5.1 Stilts

The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

]3.6 EQUIPMENT

3.6.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.6.2 Weight Handling Equipment

a. Cranes and derricks shall be equipped as specified in EM 385-1-1, section 16.

b. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated.[Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Conference.] Contractor's operator shall remain with the crane during the spot check.

c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.

d. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.

e. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall

follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.

g. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

h. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees shall be kept clear of loads about to be lifted and of suspended loads.

j. The Contractor shall use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.6.3 Equipment and Mechanized Equipment

a. Proof of qualifications for operator shall be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Such additional safety precautions or requirements shall be incorporated into the AHAs.

[c. A Machinery & Mechanized Equipment Certification Form shall be submitted for acceptance by the Contracting Officer prior to being

placed into use. A copy of the certification form will be provided during the Pre-construction Conference.]

3.7 EXCAVATIONS

The competent person shall perform soil classification in accordance with 29 CFR 1926.

3.7.1 Utility Locations

Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract.

3.7.2 Utility Location Verification

The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.061 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.7.3 Shoring Systems

Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data.

Extreme care must be used when excavating near direct burial electric underground cables.

3.7.4 Trenching Machinery

Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.8 UTILITIES WITHIN CONCRETE SLABS

Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.9 ELECTRICAL

3.9.1 Conduct of Electrical Work

Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.9.2 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.10 WORK IN CONFINED SPACES

The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6). Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

-- End of Section --

SECTION 13280A

ASBESTOS ABATEMENT

11/01

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|------------|---|
| ANSI Z87.1 | (2003) Practice for Occupational and Educational Eye and Face Protection |
| ANSI Z88.2 | (1992) Respiratory Protection |
| ANSI Z9.2 | (2001) Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems |

ASTM INTERNATIONAL (ASTM)

- | | |
|-------------|--|
| ASTM C 732 | (2001) Aging Effects of Artificial Weathering on Latex Sealants |
| ASTM D 1331 | (1989; R 2001) Surface and Interfacial Tension of Solutions of Surface-Active Agents |
| ASTM D 2794 | (1993; R 1999e1) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) |
| ASTM D 4397 | (2002) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications |
| ASTM D 522 | (1993a; R 2001) Mandrel Bend Test of Attached Organic Coatings |
| ASTM E 119 | (2000a) Fire Tests of Building Construction and Materials |
| ASTM E 1368 | (2002) Visual Inspection of Asbestos Abatement Projects |
| ASTM E 736 | (2000) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members |
| ASTM E 84 | (2003) Surface Burning Characteristics of Building Materials |

ASTM E 96 (2000e1) Water Vapor Transmission of Materials

COMPRESSED GAS ASSOCIATION (CGA)

CGA G-7 (2003) Compressed Air for Human Respiration

CGA G-7.1 (1997) Commodity Specification for Air

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 84-100 (1984; 3rd Ed, R: 1994) NIOSH Manual of Analytical Methods

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) Safety and Health Requirements Manual

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 340/1-90/018 (1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance

EPA 340/1-90/019 (1990) Asbestos/NESHAP Adequately Wet Guidance

EPA 560/5-85-024 (1985) Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards

29 CFR 1926 Safety and Health Regulations for Construction

40 CFR 61 National Emission Standards for Hazardous Air Pollutants

40 CFR 763 Asbestos

42 CFR 84 Approval of Respiratory Protective Devices

49 CFR 107 Hazardous Materials Program Procedures

49 CFR 171 General Information, Regulations, and Definitions

49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 173 Shippers - General Requirements for Shipments and Packagings

UNDERWRITERS LABORATORIES (UL)

UL 586 (1996; Rev thru Apr 2000) High-Efficiency,
Particulate, Air Filter Units

THULE AB REGULATIONS

- 1) Standards Governing Environmental Protection for U.S. Installations in Greenland
- 2) Final Governing Standards (FGS), Chapter 15, Paragraph 15.4
- 3) Thule AB Lead Paint Operating and Management Plans

1.2 DEFINITIONS

- a. Adequately Wet: A term defined in 40 CFR 61, Subpart M, and EPA 340/1-90/019 meaning to sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
- b. Aggressive Method: Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact asbestos-containing material (ACM).
- c. Amended Water: Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.
- d. Asbestos: Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
- e. Asbestos-Containing Material (ACM): Any materials containing more than one percent asbestos.
- f. Asbestos Fiber: A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.
- g. Authorized Person: Any person authorized by the Contractor and required by work duties to be present in the regulated areas.
- h. Building Inspector: Individual who inspects buildings for asbestos and has EPA Model Accreditation Plan (MAP) "Building Inspector" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- i. Certified Industrial Hygienist (CIH): An Industrial Hygienist certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.
- j. Class I Asbestos Work: Activities defined by OSHA involving the removal of thermal system insulation (TSI) and surfacing ACM.

- k. Class II Asbestos Work: Activities defined by OSHA involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos - containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Certain "incidental" roofing materials such as mastic, flashing and cements when they are still intact are excluded from Class II asbestos work. Removal of small amounts of these materials which would fit into a glovebag may be classified as a Class III job.
- l. Class III Asbestos Work: Activities defined by OSHA that involve repair and maintenance operations, where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.
- m. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean-up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.
- n. Clean room: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- o. Competent Person: In addition to the definition in 29 CFR 1926, Section .32(f), a person who is capable of identifying existing asbestos hazards as defined in 29 CFR 1926, Section .1101, selecting the appropriate control strategy, has the authority to take prompt corrective measures to eliminate them and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- p. Contractor/Supervisor: Individual who supervises asbestos abatement work and has EPA Model Accreditation Plan "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- q. Critical Barrier: One or more layers of plastic sealed over all openings into a regulated area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a regulated area from migrating to an adjacent area.
- r. Decontamination Area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- s. Demolition: The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
- t. Disposal Bag: A 0.15 mm thick, leak-tight plastic bag,

pre-labeled in accordance with 29 CFR 1926, Section .1101, used for transporting asbestos waste from containment to disposal site.

- u. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount which can be contained in 1 standard sized glovebag or waste bag, not larger than 1.5 m in length and width in order to access a building component.
- v. Equipment Room or Area: An area adjacent to the regulated area used for the decontamination of employees and their equipment.
- w. Employee Exposure: That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- x. Fiber: A fibrous particulate, 5 micrometers or longer, with a length to width ratio of at least 3 to 1.
- y. Friable ACM: A term defined in 40 CFR 61, Subpart M and EPA 340/1-90/018 meaning any material which contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent, as determined by a method other than point counting by PLM, the asbestos content is verified by point counting using PLM.
- z. Glovebag: Not more than a 1.5 by 1.5 m impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.
- aa. High-Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
- bb. Homogeneous Area: An area of surfacing material or thermal system insulation that is uniform in color and texture.
- cc. Industrial Hygienist: A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
- dd. Intact: ACM which has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Removal of "intact" asphaltic, resinous, cementitious products does not render the ACM non-intact simply by being separated into smaller pieces.
- ee. Model Accreditation Plan (MAP): USEPA training accreditation requirements for persons who work with asbestos as specified in 40 CFR 763, Subpart E, Appendix C.
- ff. Modification: A changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system.

- gg. Negative Exposure Assessment: A demonstration by the Contractor to show that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limits (PELs).
- hh. NESHAP: National Emission Standards for Hazardous Air Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61, Subpart M.
- ii. Nonfriable ACM: A NESHAP term defined in 40 CFR 61, Subpart M and EPA 340/1-90/018 meaning any material containing more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
- jj. Nonfriable ACM (Category I): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90/018 meaning asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.
- kk. Nonfriable ACM (Category II): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90/018 meaning any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos, as determined using the methods specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- ll. Permissible Exposure Limits (PELs):
 - (1) PEL-Time weighted average (TWA): Concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8 hour time weighted average (TWA), as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH 84-100 analytical method 7400.
 - (2) PEL-Excursion Limit: An airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH 84-100 analytical method 7400.
- mm. Regulated Area: An OSHA term defined in 29 CFR 1926, Section .1101 meaning an area established by the Contractor to demarcate areas where Class I, II, and III asbestos work is conducted; also any adjoining area where debris and waste from such asbestos work accumulate; and an area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.
- nn. Removal: All operations where ACM is taken out or stripped from structures or substrates, and includes demolition operations.
- oo. Repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM attached to structures or

substrates. If the amount of asbestos so "disturbed" cannot be contained in 1 standard glovebag or waste bag, Class I precautions are required.

pp. Spills/Emergency Cleanups: Cleanup of sizable amounts of asbestos waste and debris which has occurred, for example, when water damage occurs in a building, and sizable amounts of ACM are dislodged. A Competent Person evaluates the site and ACM to be handled, and based on the type, condition and extent of the dislodged material, classifies the cleanup as Class I, II, or III. Only if the material was intact and the cleanup involves mere contact of ACM, rather than disturbance, could there be a Class IV classification.

qq. Surfacing ACM: Asbestos-containing material which contains more than 1% asbestos and is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

rr. Thermal system insulation (TSI) ACM: ACM which contains more than 1% asbestos and is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.

ss. Transite: A generic name for asbestos cement wallboard and pipe.

tt. Worker: Individual (not designated as the Competent Person or a supervisor) who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926, Section .1101, to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation required by 40 CFR 763, Subpart E, Appendix C, if required by the OSHA Class of work to be performed or by the state where the work is to be performed.

1.3 DESCRIPTION OF WORK

The work covered by this section includes the removal of asbestos-containing materials (ACM) which are encountered during demolition activities associated with this project and describes procedures and equipment required to protect workers and occupants of the regulated area from contact with airborne asbestos fibers and ACM dust and debris. Activities include OSHA Class I and Class II work operations involving ACM. The work also includes containment, storage, transportation and disposal of the generated ACM wastes. More specific operational procedures shall be detailed in the required Accident Prevention Plan and its subcomponents, the Asbestos Hazard Abatement Plan and Activity Hazard Analyses required in paragraph SAFETY AND HEALTH PROGRAM AND PLANS.

1.3.1 Abatement Work Tasks

The specific ACM to be abated is identified on the detailed plans and project drawings. A summary of work task data elements for each individual ACM abatement work task to include the appropriate RESPONSE ACTION DETAIL SHEET (item to be abated and methods to be used) and SET-UP DETAIL SHEETS (containment techniques to include safety precautions and methods) is included in Table 1, "Individual Work Task Data Elements" at the end of this section.

1.3.2 Unexpected Discovery of Asbestos

For any previously untested building components suspected to contain asbestos and located in areas impacted by the work, the Contractor shall notify the Contracting Officer (CO) who will have the option of ordering up to 3 bulk samples to be obtained at the Contractor's expense and delivered to a laboratory accredited under the National Institute of Standards and Technology (NIST) "National Voluntary Laboratory Accreditation Program (NVLAP)" and analyzed by PLM at no additional cost to the Government. Any additional components identified as ACM that have been approved by the Contracting Officer for removal shall be removed by the Contractor and will be paid for by an equitable adjustment to the contract price under the CONTRACT CLAUSE titled "changes". Sampling activities undertaken to determine the presence of additional ACM shall be conducted by personnel who have successfully completed the EPA Model Accreditation Plan (MAP) "Building Inspector" training course required by 40 CFR 763, Subpart E, Appendix C.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Respiratory Protection Program; G

Records of the respirator program.

Cleanup and Disposal; G

Waste shipment records. Weigh bills and delivery tickets shall be furnished for information only.

Detailed Drawings; G

Descriptions, detail project drawings, and site layout to include worksite containment area techniques as prescribed on applicable SET-UP DETAIL SHEETS, local exhaust ventilation system locations, decontamination units and load-out units, other temporary waste storage facility, access tunnels, location of temporary utilities (electrical, water, sewer) and boundaries of each regulated area.

Materials and Equipment

Manufacturer's catalog data for all materials and equipment to be used in the work, including brand name, model, capacity, performance characteristics and any other pertinent information. Test results and certificates from the manufacturer of encapsulants substantiating compliance with performance requirements of this specification. Material Safety Data Sheets for all chemicals to be used onsite in the same format as implemented in the Contractor's HAZARD COMMUNICATION PROGRAM. Data shall include, but shall not be limited to, the following items:

- a. High Efficiency Filtered Air (HEPA) local exhaust equipment
- b. Vacuum cleaning equipment
- c. Pressure differential monitor for HEPA local exhaust equipment
- d. Air monitoring equipment
- e. Respirators
- f. Personal protective clothing and equipment
 - (1) Coveralls
 - (2) Underclothing
 - (3) Other work clothing
 - (4) Foot coverings
 - (5) Hard hats
 - (6) Eye protection
 - (7) Other items required and approved by Contractors Designated IH and Competent Person
- g. Glovebag
- h. Duct Tape
- i. Disposal Containers
 - (1) Disposal bags
 - (2) Fiberboard drums
 - (3) Paperboard boxes
- j. Sheet Plastic
 - (1) Polyethylene Sheet - General
 - (2) Polyethylene Sheet - Flame Resistant
 - (3) Polyethylene Sheet - Reinforced
- k. Wetting Agent
 - (1) Amended Water
 - (2) Removal encapsulant
- l. Strippable Coating
- m. Prefabricated Decontamination Unit
- n. Other items
- o. Chemical encapsulant
- p. Chemical encasement materials
- q. Material Safety Data Sheets (for all chemicals proposed)

Qualifications; G

A written report providing evidence of qualifications for

personnel, facilities and equipment assigned to the work.

Training Program

A copy of the written project site-specific training material as indicated in 29 CFR 1926, Section .1101 that will be used to train onsite employees. The training document shall be signed by the Contractor's Designated IH and Competent Person.

Medical Requirements

Physician's written opinion.

Encapsulants

Certificates stating that encapsulants meet the applicable specified performance requirements.

SD-06 Test Reports

Exposure Assessment and Air Monitoring; G

Initial exposure assessments, negative exposure assessments, air-monitoring results and documentation.

Local Exhaust Ventilation

Pressure differential recordings.

Licenses, Permits and Notifications; G

Licenses, permits, and notifications.

SD-07 Certificates

Vacuum, Filtration and Ventilation Equipment

Manufacturer's certifications showing compliance with ANSI Z9.2 for:

- a. Vacuums.
- b. Water filtration equipment.
- c. Ventilation equipment.
- d. Other equipment required to contain airborne asbestos fibers.

1.5 QUALIFICATIONS

1.5.1 Written Qualifications and Organization Report

The Contractor shall furnish a written qualifications and organization report providing evidence of qualifications of the Contractor, Contractor's Project Supervisor, Designated Competent Person, supervisors and workers; Designated IH (person assigned to project and firm name); independent testing laboratory (including name of firm, principal, and analysts who will perform analyses); all subcontractors to be used including disposal transportation and disposal facility firms, subcontractor supervisors,

subcontractor workers; and any others assigned to perform asbestos abatement and support activities. The report shall include an organization chart showing the Contractor's staff organization for this project by name and title, chain of command and reporting relationship with all subcontractors. The report shall be signed by the Contractor, the Contractor's onsite project manager, Designated Competent Person, Designated IH, designated testing laboratory and the principals of all subcontractors to be used. The Contractor shall include the following statement in the report: "By signing this report I certify that the personnel I am responsible for during the course of this project fully understand the contents of 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and the federal, state and local requirements specified in paragraph SAFETY AND HEALTH PROGRAM AND PLANS for those asbestos abatement activities that they will be involved in."

1.5.2 Specific Requirements

The Contractor shall designate in writing, personnel meeting the following qualifications:

- a. Designated Competent Person: The name, address, telephone number, and resume of the Contractor's Designated Competent Person shall be provided. Evidence that the full-time Designated Competent Person is qualified in accordance with 29 CFR 1926, Sections .32 and .1101, has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and is experienced in the administration and supervision of asbestos abatement projects, including exposure assessment and monitoring, work practices, abatement methods, protective measures for personnel, setting up and inspecting asbestos abatement work areas, evaluating the integrity of containment barriers, placement and operation of local exhaust systems, ACM generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, site safety and health requirements, notification of other employees onsite, etc. The duties of the Competent Person shall include the following: controlling entry to and exit from the regulated area; supervising any employee exposure monitoring required by 29 CFR 1926, Section .1101; ensuring that all employees working within a regulated area wear the appropriate personal protective equipment (PPE), are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating conditions and are functioning properly. The Designated Competent Person shall be responsible for compliance with applicable federal, state and local requirements, the Contractor's Accident Prevention Plan and Asbestos Hazard Abatement Plan. The Designated Competent Person shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that this person has a minimum of 2 years of on-the-job asbestos abatement experience relevant to OSHA competent person requirements. The Designated Competent Person shall be onsite at all times during the conduct of this project.
- b. Project and Other Supervisors: The Contractor shall provide the

name, address, telephone number, and resume of the Project Supervisor and other supervisors who have responsibility to implement the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses, the authority to direct work performed under this contract and verify compliance, and have EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C. The Project Supervisor and other supervisors shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that the Project Supervisor has a minimum of 2 years of on-the-job asbestos abatement experience relevant to project supervisor responsibilities and the other supervisors have a minimum of 1 year on-the-job asbestos abatement experience commensurate with the responsibilities they will have on this project.

- c. Designated Industrial Hygienist: The Contractor shall provide the name, address, telephone number, resume and other information specified below for the Industrial Hygienist (IH) selected to prepare the Contractor's Asbestos Hazard Abatement Plan, prepare and perform training, direct air monitoring and assist the Contractor's Competent Person in implementing and ensuring that safety and health requirements are complied with during the performance of all required work. The Designated IH shall be a person who is board certified in the practice of industrial hygiene as determined and documented by the American Board of Industrial Hygiene (ABIH), has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and has a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities. The Designated IH shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Designated IH shall be completely independent from the Contractor according to federal, state, or local regulations; that is, shall not be a Contractor's employee or be an employee or principal of a firm in a business relationship with the Contractor negating such independent status. A copy of the Designated IH's current valid ABIH certification shall be included. The Designated IH shall be onsite at all times for the duration of asbestos activities and shall be available for emergencies. In addition, the Designated IH shall prepare, and the Contractor shall submit, the name, address, telephone numbers and resumes of additional IH's and industrial hygiene technicians (IHT) who will be assisting the Designated IH in performing onsite tasks. IHs and IHTs supporting the Designated IH shall have a minimum of 2 years of practical onsite asbestos abatement experience. The formal reporting relationship between the Designated IH and the support IHs and IHTs, the Designated Competent Person, and the Contractor shall be indicated.
- d. Asbestos Abatement Workers: Asbestos abatement workers shall meet the requirements contained in 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and other applicable federal, state and local

requirements. Worker training documentation shall be provided as required on the "Certificate of Workers Acknowledgment" in this paragraph.

- e. Worker Training and Certification of Worker Acknowledgment: Training documentation will be required for each employee who will perform OSHA Class I, Class II, Class III, or Class IV asbestos abatement operations. Such documentation shall be submitted on a Contractor generated form titled "Certificate of Workers Acknowledgment", to be completed for each employee in the same format and containing the same information as the example certificate at the end of this section. Training course completion certificates (initial and most recent update refresher) required by the information checked on the form shall be attached.
- f. Physician: The Contractor shall provide the name, medical qualifications, address, telephone number and resume of the physician who will or has performed the medical examinations and evaluations of the persons who will conduct the asbestos abatement work tasks. The physician shall be currently licensed in the state where the workers will be or have been examined, have expertise in pneumoconiosis and shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1926, Section .1101 and paragraph MEDICAL REQUIREMENTS. The physician shall be familiar with the site's hazards and the scope of this project.
- g. First Aid and CPR Trained Persons: The names of at least 2 persons who are currently trained in first aid and CPR by the American Red Cross or other approved agency shall be designated and shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030 and shall be included in the Contractor's Bloodborne Pathogen Program. These persons may perform other duties but shall be immediately available to render first aid when needed. A copy of each designated person's current valid First Aid and CPR certificate shall be provided.
- h. Independent Testing Laboratory: The Contractor shall provide the name, address and telephone number of the independent testing laboratory selected to perform the sample analyses and report the results. The testing laboratory shall be completely independent from the Contractor as recognized by federal, state or local regulations. Written verification of the following criteria, signed by the testing laboratory principal and the Contractor, shall be submitted:

(1) Phase contrast microscopy (PCM): The laboratory is fully equipped and proficient in conducting PCM of airborne samples using the methods specified by 29 CFR 1926, Section .1101, OSHA method ID-160, the most current version of NIOSH 84-100 Method 7400, and NIOSH 84-100 Method 7402, transmission electron microscopy (TEM); the laboratory is currently judged proficient (classified as acceptable) in counting airborne asbestos samples by PCM by successful participation in each of the last 4 rounds in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program; the names of the selected

microscopists who will analyze airborne samples by PCM with verified documentation of their proficiency to conduct PCM analyses by being judged proficient in counting samples as current participating analysts in the AIHA PAT Program, and having successfully completed the Asbestos Sampling and Analysis course (NIOSH 582 or equivalent) with a copy of course completion certificate provided; when the PCM analysis is to be conducted onsite, documentation shall be provided certifying that the onsite analyst meets the same requirements.

(2) Polarized light microscopy (PLM): The laboratory is fully equipped and proficient in conducting PLM analyses of suspect ACM bulk samples in accordance with 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for bulk asbestos analysis and will use analysts (names shall be provided) with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content.

(3) Transmission electron microscopy (TEM): The laboratory is fully equipped and proficient in conducting TEM analysis of airborne samples using the mandatory method specified by 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for airborne sample analysis of asbestos by TEM; the laboratory will use analysts (names shall be provided) that are currently evaluated as competent with demonstrated proficiency under the NIST NVLAP for airborne sample analysis of asbestos by TEM.

(4) PCM/TEM: The laboratory is fully equipped and each analyst (name shall be provided) possesses demonstrated proficiency in conducting PCM and TEM analysis of airborne samples using NIOSH 84-100 Method 7400 PCM and NIOSH 84-100 Method 7402 (TEM confirmation of asbestos content of PCM results) from the same filter.

- i. Disposal Facility, Transporter: The Contractor shall provide written evidence that the landfill to be used is approved for asbestos disposal by the local regulatory agencies. Copies of signed agreements between the Contractor (including subcontractors and transporters) and the asbestos waste disposal facility to accept and dispose of all asbestos containing waste generated during the performance of this contract shall be provided. Qualifications shall be provided for each subcontractor or transporter to be used, indicating previous experience in transport and disposal of asbestos waste to include all required state and local waste hauler requirements for asbestos. The Contractor and transporters shall meet the DOT requirements of 49 CFR 171, 49 CFR 172, and 49 CFR 173 as well as registration requirements of 49 CFR 107 and other applicable state or local requirements. The disposal facility shall meet the requirements of 40 CFR 61, Sections .154 or .155, as required in 40 CFR 61, Section .150(b), and other applicable state or local requirements.

1.5.3 Federal, State or Local Citations on Previous Projects

The Contractor and all subcontractors shall submit a statement, signed by an officer of the company, containing a record of any citations issued by Federal, State or local regulatory agencies relating to asbestos activities

(including projects, dates, and resolutions); a list of penalties incurred through non-compliance with asbestos project specifications, including liquidated damages, overruns in scheduled time limitations and resolutions; and situations in which an asbestos-related contract has been terminated (including projects, dates, and reasons for terminations). If there are none, a negative declaration signed by an officer of the company shall be provided.

1.6 REGULATORY REQUIREMENTS

In addition to detailed requirements of this specification, work performed under this contract shall comply with EM 385-1-1, applicable federal, state, and local laws, ordinances, criteria, rules and regulations regarding handling, storing, transporting, and disposing of asbestos waste materials. This includes, but is not limited to, OSHA standards, 29 CFR 1926, especially Section .1101, 40 CFR 61, Subpart M and 40 CFR 763. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply. The following state and local laws, rules and regulations regarding demolition, removal, encapsulation, construction alteration, repair, maintenance, renovation, spill/emergency cleanup, housekeeping, handling, storing, transporting and disposing of asbestos material apply:

- 1) Standards Governing Environmental Protection for U.S. Installations in Greenland
- 2) Final Governing Standards (FGS), Chapter 15, Paragraph 15.4
- 3) Thule AB Lead Paint Operating and Management Plans

1.7 SAFETY AND HEALTH PROGRAM AND PLANS

The Contractor shall develop and submit a written comprehensive site-specific Accident Prevention Plan at least 30 days prior to the preconstruction conference. The Accident Prevention Plan shall address requirements of EM 385-1-1, Appendix A, covering onsite work to be performed by the Contractor and subcontractors. The Accident Prevention Plan shall incorporate an Asbestos Hazard Abatement Plan, and Activity Hazard Analyses as separate appendices into 1 site specific Accident Prevention Plan document. Any portions of the Contractor's overall Safety and Health Program that are referenced in the Accident Prevention Plan, e.g., respirator program, hazard communication program, confined space entry program, etc., shall be included as appendices to the Accident Prevention Plan. The plan shall take into consideration all the individual asbestos abatement work tasks identified in Table 1. The plan shall be prepared, signed (and sealed, including certification number if required), and dated by the Contractor's Designated IH, Competent Person, and Project Supervisor.

1.7.1 Asbestos Hazard Abatement Plan Appendix

The Asbestos Hazard Abatement Plan appendix to the Accident Prevention Plan shall include, but not be limited to, the following:

- a. The personal protective equipment to be used;

- b. The location and description of regulated areas including clean and dirty areas, access tunnels, and decontamination unit (clean room, shower room, equipment room, storage areas such as load-out unit);
- c. Initial exposure assessment in accordance with 29 CFR 1926, Section .1101;
- d. Level of supervision;
- e. Method of notification of other employers at the worksite;
- f. Abatement method to include containment and control procedures;
- g. Interface of trades involved in the construction;
- h. Sequencing of asbestos related work;
- i. Storage and disposal procedures and plan;
- j. Type of wetting agent and asbestos encapsulant to be used;
- k. Location of local exhaust equipment;
- l. Air monitoring methods (personal, environmental and clearance);
- m. Bulk sampling and analytical methods (if required);
- n. A detailed description of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations;
- o. Fire and medical emergency response procedures;
- p. The security procedures to be used for all regulated areas.

1.7.2 Activity Hazard Analyses Appendix

Activity Hazard Analyses, for each major phase of work, shall be submitted and updated during the project. The Activity Hazard Analyses format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analyses has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The Activity Hazard Analyses shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

1.8 PRECONSTRUCTION CONFERENCE AND ONSITE SAFETY

The Contractor and the Contractor's Designated Competent Person, Project Supervisor, and Designated IH shall meet with the Contracting Officer prior to beginning work at a safety preconstruction conference to discuss the details of the Contractor's submitted Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses appendices. Deficiencies in the Accident Prevention Plan will be discussed and the Accident Prevention Plan shall be revised to correct the deficiencies and

resubmitted for acceptance. Any changes required in the specification as a result of the Accident Prevention Plan shall be identified specifically in the plan to allow for free discussion and acceptance by the Contracting Officer, prior to the start of work. Onsite work shall not begin until the Accident Prevention Plan has been accepted. A copy of the written Accident Prevention Plan shall be maintained onsite. Changes and modifications to the accepted Accident Prevention Plan shall be made with the knowledge and concurrence of the Designated IH, the Project Supervisor, Designated Competent Person, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Designated IH shall bring such hazard to the attention of the Project Supervisor, Designated Competent Person, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Once accepted by the Contracting Officer, the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses will be enforced as if an addition to the contract. Disregarding the provisions of this contract or the accepted Accident Prevention Plan will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

1.9 SECURITY

Fenced and locked security area shall be provided for each regulated area. A log book shall be kept documenting entry into and out of the regulated area. Entry into regulated areas shall only be by personnel authorized by the Contractor and the Contracting Officer. Personnel authorized to enter regulated areas shall be trained, be medically evaluated, and wear the required personal protective equipment for the specific regulated area to be entered.

1.10 MEDICAL REQUIREMENTS

Medical requirements shall conform to 29 CFR 1926, Section .1101.

1.10.1 Medical Examinations

Before being exposed to airborne asbestos fibers, workers shall be provided with a medical examination as required by 29 CFR 1926, Section .1101 and other pertinent state or local requirements. This requirement shall have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. X-ray films of asbestos workers shall be identified to the consulting radiologist and medical record jackets shall be marked with the word "asbestos."

1.10.1.1 Information Provided to the Physician

The Contractor shall provide the following information in writing to the examining physician:

- a. A copy of 29 CFR 1926, Section .1101 and Appendices D, E, G, and I;
- b. A description of the affected employee's duties as they relate to the employee's exposure;
- c. The employee's representative exposure level or anticipated

exposure level;

- d. A description of any personal protective and respiratory equipment used or to be used;
- e. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

1.10.1.2 Written Medical Opinion

For each worker, a written medical opinion prepared and signed by a licensed physician indicating the following:

- a. Summary of the results of the examination.
- b. The potential for an existing physiological condition that would place the employee at an increased risk of health impairment from exposure to asbestos.
- c. The ability of the individual to wear personal protective equipment, including respirators, while performing strenuous work tasks under cold and/or heat stress conditions.
- d. A statement that the employee has been informed of the results of the examination, provided with a copy of the results, informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure, and informed of any medical condition that may result from asbestos exposure.

1.10.2 Medical and Exposure Records

Complete and accurate records shall be maintained of each employee's medical examinations, medical records, and exposure data, as required by 29 CFR 1910, Section .1910.20 and 29 CFR 1926, Section .1101 for a period of 50 years after termination of employment. Records of the required medical examinations and exposure data shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health (OSHA) or authorized representatives of the employee and an employee's physician upon request of the employee or former employee. A copy of the required medical certification for each employee shall be maintained on file at the worksite for review, as requested by the Contracting Officer or the representatives.

1.11 TRAINING PROGRAM

1.11.1 General Training Requirements

The Contractor shall establish a training program as specified by EPA Model Accreditation Plan (MAP), training requirements at 40 CFR 763, Subpart E, Appendix C, OSHA requirements at 29 CFR 1926, Section .1101(k)(9), and this specification. Contractor employees shall complete the required training for the type of work they are to perform and such training shall be documented and provided to the Contracting Officer as specified in paragraph QUALIFICATIONS.

1.11.2 Project Specific Training

Prior to commencement of work, each worker shall be instructed by the

Contractor's Designated IH and Competent Person in the following project specific training:

- a. The hazards and health effects of the specific types of ACM to be abated;
- b. The content and requirements of the Contractor's Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses and site-specific safety and health precautions;
- c. Hazard Communication Program;
- d. Hands-on training for each asbestos abatement technique to be employed;
- e. Heat and/or cold stress monitoring specific to this project;
- f. Air monitoring program and procedures;
- g. Medical surveillance to include medical and exposure record-keeping procedures;
- h. The association of cigarette smoke and asbestos-related disease;
- i. Security procedures;
- j. Specific work practice controls and engineering controls required for each Class of work in accordance with 29 CFR 1926, Section .1101.

1.12 RESPIRATORY PROTECTION PROGRAM

The Contractor's Designated IH shall establish in writing, and implement a respiratory protection program in accordance with 29 CFR 1926, Section .1101, 29 CFR 1910, Section .134, ANSI Z88.2, CGA G-7, CGA G-7.1 and DETAIL SHEET 12. The Contractor's Designated IH shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

- a. The company policy, used for the assignment of individual responsibility, accountability, and implementation of the respiratory protection program.
- b. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.
- c. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.
- d. Training in the proper use and limitations of respirators.
- e. Respirator fit-testing, i.e., quantitative, qualitative and individual functional fit checks.
- f. Regular cleaning and disinfection of respirators.

- g. Routine inspection of respirators during cleaning and after each use when designated for emergency use.
 - h. Storage of respirators in convenient, clean, and sanitary locations.
 - i. Surveillance of regulated area conditions and degree of employee exposure (e.g., through air monitoring).
 - j. Regular evaluation of the continued effectiveness of the respiratory protection program.
 - k. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eye wear usage; contact lenses usage; etc.).
- l. Proper training in putting on and removing respirators.

1.12.1 Respiratory Fit Testing

A qualitative or quantitative fit test conforming to 29 CFR 1926, Section 1101, Appendix C shall be conducted by the Contractor's Designated IH for each Contractor worker required to wear a respirator, and for the Contracting Officer and authorized visitors who enter a regulated area where respirators are required to be worn. A respirator fit test shall be performed for each worker wearing a negative-pressure respirator prior to initially wearing a respirator on this project and every 6 months thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. If physical changes develop that will affect the fit, a new fit test for the worker shall be performed. Functional fit checks shall be performed by employees each time a respirator is put on and in accordance with the manufacturer's recommendation.

1.12.2 Respirator Selection and Use Requirements

The Contractor shall provide respirators, and ensure that they are used as required by 29 CFR 1926, Section .1101 and in accordance with the manufacturer's recommendations. Respirators shall be jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (MSHA/NIOSH), or by NIOSH, under the provisions of 42 CFR 84, for use in environments containing airborne asbestos fibers. Personnel who handle ACM, enter regulated areas that require the wearing of a respirator, or who are otherwise carrying out abatement activities that require the wearing of a respirator, shall be provided with approved respirators that are fully protective of the worker at the measured or anticipated airborne asbestos concentration level to be encountered. For air-purifying respirators, the particulate filter portion of the cartridges or canister approved for use in airborne asbestos environments shall be high-efficiency particulate air (HEPA). The initial respirator selection and the decisions regarding the upgrading or downgrading of respirator type shall be made by the Contractor's Designated IH based on the measured or anticipated airborne asbestos fiber concentrations to be encountered. Recommendations made by the Contractor's Designated IH to downgrade respirator type shall be submitted in writing to

the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade respiratory type when there is an immediate danger to the health and safety of the wearer. Respirators shall be used in the following circumstances:

- a. During all Class I asbestos jobs.
- b. During all Class II work where the ACM is not removed in a substantially intact state.
- c. During all Class II and III work which is not performed using wet methods. Respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and ACM is removed in an intact state.
- d. During all Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment.
- e. During all Class III jobs where TSI or surfacing ACM is being disturbed.
- f. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
- g. During all work where employees are exposed above the PEL-TWA or PEL-Excursion Limit.
- h. In emergencies

1.12.3 Class I Work

The Contractor shall provide: (1) a tight-fitting, powered air purifying respirator equipped with high efficiency filters, or (2) a full-facepiece supplied air respirator operated in the pressure demand mode, equipped with HEPA egress cartridges, or (3) an auxiliary positive pressure self-contained breathing apparatus, for all employees within the regulated area where Class I work is being performed; provided that a negative exposure assessment has not been produced, and that the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full-facepiece supplied air respirator, operated in the pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

1.12.4 Class II and III Work

The Contractor shall provide an air purifying respirator, other than a disposable respirator, equipped with high-efficiency filters whenever the employee performs Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment ; and Class III jobs where TSI or surfacing ACM is being disturbed.

1.12.5 Sanitation

Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

1.13 HAZARD COMMUNICATION PROGRAM

A hazard communication program shall be established and implemented in accordance with 29 CFR 1926, Section .59. Material safety data sheets (MSDSs) shall be provided for all hazardous materials brought onto the worksite. One copy shall be provided to the Contracting Officer and 1 copy shall be included in the Contractor's Hazard Communication Program.

1.14 LICENSES, PERMITS AND NOTIFICATIONS

1.14.1 General Legal Requirements

Necessary licenses, permits and notifications shall be obtained in conjunction with the project's asbestos abatement, transportation and disposal actions and timely notification furnished of such actions as required by federal, state, regional, and local authorities. The Contractor shall notify the local air pollution control district/agency and the Contracting Officer in writing, at least 10 days prior to the commencement of work, in accordance with 40 CFR 61, Subpart M, and state and local requirements to include the mandatory "Notification of Demolition and Renovation Record" form and other required notification documents. Notification shall be by Certified Mail, Return Receipt Requested. The Contractor shall furnish copies of the receipts to the Contracting Officer, in writing, prior to the commencement of work. Local fire department shall be notified 3 days before fire-proofing material is removed from a building and the notice shall specify whether or not the material contains asbestos.

A copy of the rental company's written acknowledgment and agreement shall be provided as required by paragraph RENTAL EQUIPMENT. For licenses, permits, and notifications that the Contractor is responsible for obtaining, the Contractor shall pay any associated fees or other costs incurred.

1.14.2 Litigation and Notification

The Contractor shall notify the Contracting Officer if any of the following occur:

- a. The Contractor or any of the subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this contract;
- b. Proceedings are commenced which could lead to revocation of related permits or licenses; permits, licenses or other Government authorizations relating to this contract are revoked;
- c. Litigation is commenced which would affect this contract;
- d. The Contractor or any of the subcontractors become aware that their equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

1.15 PERSONAL PROTECTIVE EQUIPMENT

Three complete sets of personal protective equipment shall be made available to the Contracting Officer and authorized visitors for entry to the regulated area. Contracting Officer and authorized visitors shall be provided with training equivalent to that provided to Contractor employees in the selection, fitting, and use of the required personal protective equipment and the site safety and health requirements. Contractor workers

shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Designated IH and Designated Competent Person shall select and approve all the required personal protective clothing and equipment to be used.

1.15.1 Respirators

Respirators shall be in accordance with paragraph RESPIRATORY PROTECTION PROGRAM.

1.15.2 Whole Body Protection

Personnel exposed to airborne concentrations of asbestos that exceed the PELs, or for all OSHA Classes of work for which a required negative exposure assessment is not produced, shall be provided with whole body protection and such protection shall be worn properly. The Contractor's Designated IH and Competent Person shall select and approve the whole body protection to be used. The Competent Person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the regulated area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the regulated area or be properly laundered in accordance with 29 CFR 1926, Section .1101.

Whole body protection used for asbestos abatement shall not be removed from the worksite by a worker to be cleaned. Recommendations made by the Contractor's Designated IH to downgrade whole body protection shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person, in consultation with the Designated IH, has the authority to take immediate action to upgrade or downgrade whole body protection when there is an immediate danger to the health and safety of the wearer.

1.15.2.1 Coveralls

Disposable-breathable coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles. See DETAIL SHEET 13.

1.15.2.2 Underwear

Disposable underwear shall be provided. If reusable underwear are used, they shall be disposed of as asbestos contaminated waste or laundered in accordance with 29 CFR 1926, Section .1101. Asbestos abatement workers shall not remove contaminated reusable underwear worn during abatement of ACM from the site to be laundered.

1.15.2.3 Work Clothing

An additional coverall shall be provided when the abatement and control method employed does not provide for the exit from the regulated area directly into an attached decontamination unit. Cloth work clothes for wear under the protective coverall, and foot coverings, shall be provided when work is being conducted in low temperature conditions. Cloth work clothes shall be either disposed of as asbestos contaminated waste or properly laundered in accordance with 29 CFR 1926, Section .1101.

1.15.2.4 Gloves

Gloves shall be provided to protect the hands. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) a suitable glove shall be provided and used.

1.15.2.5 Foot Coverings

Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Rubber boots shall be used in moist or wet areas. Reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as ACM waste. Disposable protective foot covering shall be disposed of as ACM waste. If rubber boots are not used, disposable foot covering shall be provided.

1.15.2.6 Head Covering

Hood type disposable head covering shall be provided. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

1.15.2.7 Protective Eye Wear

Eye protection provided shall be in accordance with ANSI Z87.1.

1.16 HYGIENE FACILITIES AND PRACTICES

The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

1.16.1 Shower Facilities

Shower facilities, when provided, shall comply with 29 CFR 1910, Section .141(d)(3).

1.16.2 3-Stage Decontamination Area

A temporary negative pressure decontamination unit that is adjacent and attached in a leak-tight manner to the regulated area shall be provided as described in SET-UP DETAIL SHEET Numbers 22 and 23. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The decontamination unit shall have an equipment room and a clean room separated by a shower that complies with 29 CFR 1910, Section .141 (unless the Contractor can demonstrate that such facilities are not feasible). Equipment and surfaces of containers filled with ACM shall be cleaned prior to removing them from the equipment room or area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste. Two separate lockers shall be provided for each asbestos worker, one in the equipment room and one in the clean room. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 160 L electric water heater with minimum recovery rate of 80 L per hour and a temperature controller for each showerhead. The Contractor shall provide a minimum of 2 showers. Instantaneous type in-line water heater may be incorporated at each shower head in lieu of hot water heater, upon approval by the Contracting Officer. Flow and temperature controls shall be located within

the shower and shall be adjustable by the user. The wastewater pump shall be sized for 1.25 times the showerhead flow-rate at a pressure head sufficient to satisfy the filter head loss and discharge line losses. The pump shall supply a minimum 1.6 L/s flow with 10.7 m of pressure head. Used shower water shall be collected and filtered to remove asbestos contamination. Filters and residue shall be disposed of as asbestos contaminated material, per DETAIL SHEETS 9 and 14. Filtered water shall be discharged to the sanitary system. Wastewater filters shall be installed in series with the first stage pore size of 20 microns and the second stage pore size of 5 microns. The floor of the decontamination unit's clean room shall be kept dry and clean at all times. Water from the shower shall not be allowed to wet the floor in the clean room. Surfaces of the clean room and shower shall be wet-wiped 2 times after each shift change with a disinfectant solution. Proper housekeeping and hygiene requirements shall be maintained. Soap and towels shall be provided for showering, washing and drying. Any cloth towels provided shall be disposed of as ACM waste or shall be laundered in accordance with 29 CFR 1926, Section .1101.

1.16.3 Load-Out Unit

A temporary load-out unit that is adjacent and connected to the regulated area and shall be provided as described in DETAIL SHEET Number 20 . Utilization of prefabricated units shall have prior approval of the Contracting Officer. The load-out unit shall be attached in a leak-tight manner to each regulated area. Surfaces of the load-out unit and access tunnel shall be adequately wet-wiped 2 times after each shift change. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.4 Single Stage Decontamination Area

A decontamination area (equipment room/area) shall be provided for Class I work involving less than 7.5 m² or 0.9 square meters of TSI or surfacing ACM, and for Class II and Class III asbestos work operations where exposures exceed the PELs or where there is no negative exposure assessment produced before the operation. The equipment room or area shall be adjacent to the regulated area for the decontamination of employees, material, and their equipment which is contaminated with asbestos. The equipment room or area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface. The area must be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.5 Decontamination Area Entry Procedures

The Contractor shall ensure that employees entering the decontamination area through the clean room or clean area:

- a. Remove street clothing in the clean room or clean area and deposit it in lockers.
- b. Put on protective clothing and respiratory protection before leaving the clean room or clean area.
- c. Pass through the equipment room to enter the regulated area.

1.16.6 Decontamination Area Exit Procedures

The Contractor shall ensure that the following procedures are followed:

- a. Before leaving the regulated area, respirators shall be worn while employees remove all gross contamination and debris from their work clothing using a HEPA vacuum.
- b. Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers (see Detail Sheets 9 and 14) for disposal and/or laundering.
- c. Employees shall not remove their respirators in the equipment room.
- d. Employees shall shower prior to entering the clean room. If a shower has not been located between the equipment room and the clean room or the work is performed outdoors, the Contractor shall ensure that employees engaged in Class I asbestos jobs: a) Remove asbestos contamination from their work suits in the equipment room or decontamination area using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or b) Remove their contaminated work suits in the equipment room, without cleaning worksuits, and proceed to a shower that is not adjacent to the work area.
- e. After showering, employees shall enter the clean room before changing into street clothes.

1.16.7 Lunch Areas

The Contractor shall provide lunch areas in which the airborne concentrations of asbestos are below 0.01 f/cc.

1.16.8 Smoking

Smoking, if allowed by the Contractor, shall only be permitted in designated areas approved by the Contracting Officer.

1.17 REGULATED AREAS

All Class I, II, and III asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they shall demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

1.18 WARNING SIGNS AND TAPE

Warning signs and tape printed bilingually in English and host language shall be provided at the regulated boundaries and entrances to regulated areas. The Contractor shall ensure that all personnel working in areas contiguous to regulated areas comprehend the warning signs. Signs shall be located to allow personnel to read the signs and take the necessary

protective steps required before entering the area. Warning signs, as shown and described in DETAIL SHEET 11, shall be in vertical format conforming to 29 CFR 1910 and 29 CFR 1926, Section .1101, a minimum of 500 by 350 mm , and displaying the following legend in the lower panel:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape shall be provided as shown and described on DETAIL SHEET 11. Decontamination unit signage shall be as shown and described on DETAIL SHEET 15.

1.19 WARNING LABELS

Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements are acceptable. Warning labels shall be as described in DETAIL SHEET 14, shall conform to 29 CFR 1926, Section .1101 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

1.20 LOCAL EXHAUST VENTILATION

Local exhaust ventilation units shall conform to ANSI Z9.2 and 29 CFR 1926, Section .1101. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

1.21 TOOLS

Vacuums shall be leak proof to the filter, equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system, or has otherwise been approved for use by the Contracting Officer. Residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

1.22 RENTAL EQUIPMENT

If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

1.23 AIR MONITORING EQUIPMENT

The Contractor's Designated IH shall approve air monitoring equipment to be used to collect samples. The equipment shall include, but shall not be limited to:

- a. High-volume sampling pumps that can be calibrated and operated at a constant airflow up to 16 liters per minute when equipped with a sampling train of tubing and filter cassette.
- b. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit which shall maintain a constant flow, even as filter resistance increases due to accumulation of fiber and debris on the filter surface.
- c. Single use standard 25 mm diameter cassette, open face, 0.8 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive extension cowl, and shrink bands, to be used with low flow pumps in accordance with 29 CFR 1926, Section .1101 for personal air sampling.
- d. Single use standard 25 mm diameter cassette, open face, 0.45 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive cowl, and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH 84-100 Methods 7400 and 7402, (and the transmission electric microscopy method specified at 40 CFR 763 if required).
- e. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette.
- f. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 20 to plus 60 degrees C and traceable to a NIST primary standard.

1.24 EXPENDABLE SUPPLIES

1.24.1 Glovebag

Glovebags shall be provided as described in 29 CFR 1926, Section .1101 and SET-UP DETAIL SHEET 10. The glovebag assembly shall be 0.15 mm thick plastic, prefabricated and seamless at the bottom with preprinted OSHA warning label.

1.24.2 Duct Tape

Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container shall be provided.

1.24.3 Disposal Containers

Leak-tight (defined as solids, liquids, or dust that cannot escape or spill out) disposal containers shall be provided for ACM wastes as required by 29

CFR 1926 Section .1101 and DETAIL SHEETS 9A, 9B, 9C and 14.

1.24.4 Disposal Bags

Leak-tight bags, 0.15 mm thick, shall be provided for placement of asbestos generated waste as described in DETAIL SHEET 9A.

1.24.5 Sheet Plastic

Sheet plastic shall be polyethylene of 0.15 mm minimum thickness and shall be provided in the largest sheet size necessary to minimize seams ,as indicated on the project drawings. Film shall be black and conform to ASTM D 4397, except as specified below:

1.24.6 Amended Water

Amended water shall meet the requirements of ASTM D 1331.

1.24.7 Leak-tight Wrapping

Two layers of 0.15 mm minimum thick polyethylene sheet stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags as described in DETAIL SHEET 9B. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

1.24.8 Wetting Agents

Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM greater than or equal to that provided by amended water. Performance requirements for penetrating encapsulants are specified in paragraph ENCAPSULANTS.

1.25 MISCELLANEOUS ITEMS

A sufficient quantity of other items, such as, but not limited to: scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of containments, UL approved temporary electrical equipment, material and cords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc., shall be provided.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent and shall meet the following requirements:

ALL ENCAPSULANTS

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	Univ. of Pittsburgh Protocol
Life Expectancy, 20 yrs Accelerated Aging Test	ASTM C 732
Permeability, Min. 23 ng per Pa-sec-square m	ASTM E 96

Additional Requirements for Bridging Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 730 N/m	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Min. 4.7 N-m (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Penetrating Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 730 N/m	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Min. 4.7 N-m (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Lockdown Encapsulant

Requirement	Test Standard
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Tested with fireproofing over encapsulant applied directly to steel member)	ASTM E 119
Bond Strength, 1.5 kN/m (Tests compatibility with cementitious and fibrous fireproofing)	ASTM E 736

ALL ENCAPSULANTS

Requirement

Test Standard

2.2 ENCASEMENT PRODUCTS

Encasement shall consist of primary cellular polymer coat, polymer finish coat, and any other finish coat as approved by the Contracting Officer.

2.3 RECYCLABLE MATERIALS

The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Asbestos abatement work tasks shall be performed as shown on the detailed plans and drawings, as summarized in paragraph DESCRIPTION OF WORK and including Table 1 and the Contractor's Accident Prevention Plan, Asbestos Hazard Abatement Plan, and the Activity Hazard Analyses. The Contractor shall use the engineering controls and work practices required in 29 CFR 1926, Section .1101(g) in all operations regardless of the levels of exposure. Personnel shall wear and utilize protective clothing and equipment as specified. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area. All hot work (burning, cutting, welding, etc.) shall be conducted under controlled conditions in conformance with 29 CFR 1926, Section .352, Fire Prevention. Personnel of other trades, not engaged in asbestos abatement activities, shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions of the Contractor's Accident Prevention Plan are complied with. Power to the regulated area shall be locked-out and tagged in accordance with 29 CFR 1910, and temporary electrical service with ground fault circuit interrupters shall be provided as needed. Temporary electrical service shall be disconnected when necessary for wet removal. The Contractor shall stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc, or the pre-abatement concentration, whichever is greater, outside the regulated area; or (2) equals or exceeds 1.0 f/cc inside the regulated area. The Contractor shall correct the condition to the satisfaction of the Contracting Officer, including visual inspection and air sampling. Work shall resume only upon notification by the Contracting Officer. Corrective actions shall be documented.

3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

Asbestos abatement shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government, as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all effected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and air sampling analysis results are obtained and have been evaluated by the

Contractor's Designated IH and the Contracting Officer, work shall proceed.

3.3 OBJECTS

3.3.1 Removal of Mobile Objects

Mobile objects, furniture, and equipment will be removed from the area of work by the Government before asbestos abatement work begins.

3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

Building ventilating systems supplying air into or returning air out of a regulated area shall be isolated by airtight seals to prevent the spread of contamination throughout the system. The critical barriers shall consist of 2 layers of polyethylene. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape. Critical barriers shall be installed as shown on drawings and appended SET-UP DETAIL SHEETS.

3.5 PRECLEANING

Surfaces shall be cleaned by HEPA vacuum prior to establishment of containment.

3.6 METHODS OF COMPLIANCE

3.6.1 Mandated Practices

The Contractor shall employ proper handling procedures in accordance with 29 CFR 1926 and 40 CFR 61, Subpart M, and the specified requirements. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including, but not limited to, details of construction materials, equipment, and handling procedures. The Contractor shall use the following engineering controls and work practices in all operations, regardless of the levels of exposure:

- a. Vacuum cleaners equipped with HEPA filters to collect debris and dust containing ACM.
- b. Wet methods or wetting agents to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup; except where it can be demonstrated that the use of wet methods is unfeasible due to, for example, the creation of electrical hazards, equipment malfunction, and in roofing.
- c. Prompt clean-up and disposal in leak-tight containers of wastes and debris contaminated with asbestos.
- d. Inspection and repair of polyethylene in work and high traffic areas.
- e. Cleaning of equipment and surfaces of containers filled with ACM prior to removing them from the equipment room or area.

3.6.2 Control Methods

The Contractor shall use the following control methods to comply with the PELs:

- a. Local exhaust ventilation equipped with HEPA filter dust

collection systems;

- b. Enclosure or isolation of processes producing asbestos dust;
- c. Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;
- d. Use of other work practices and engineering controls;
- e. Where the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

3.6.3 Unacceptable Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

- a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- b. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- c. Dry sweeping, shoveling, or other dry clean-up of dust and debris containing ACM.
- d. Employee rotation as a means of reducing employee exposure to asbestos.

3.6.4 Class I Work Procedures

In addition to requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the installation and operation of the control system.
- b. For jobs involving the removal of more than 7.5 m² or 0.9 square meters of TSI or surfacing material, the Contractor shall place critical barriers over all openings to the regulated area.
- c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of plastic or air-tight rigid covers.
- d. Impermeable dropcloths (0.15 mm or greater thickness) shall be placed on surfaces beneath all removal activity.
- e. Objects within the regulated area shall be handled as specified in

paragraph OBJECTS.

- f. Where a negative exposure assessment has not been provided or where exposure monitoring shows the PEL was exceeded, the regulated area shall be ventilated to move contaminated air away from the employee's breathing zone toward a HEPA unit or collection device.

3.6.5 Specific Control Methods for Class I Work

In addition to requirements of paragraph Class I Work Procedures, Class I asbestos work shall be performed using the control methods identified in the subparagraphs below.

3.6.5.1 Glovebag Systems

Glovebag systems shall be as shown in SETUP DETAIL SHEET 10. The glovebag system shall be used to remove ACM from straight runs of piping and elbows and other connections. Glovebags shall be used without modification and shall be smoke-tested for leaks and any leaks sealed prior to use. Glovebags shall be installed to completely cover the circumference of pipe or other structures where the work is to be done. Glovebags shall be used only once and shall not be moved. Glovebags shall not be used on surfaces that have temperatures exceeding 66 degrees C. Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in 2 layers of plastic or otherwise rendered intact. At least 2 persons shall perform Class I glovebag removal. Asbestos regulated work areas shall be established as specified and shown on detailed drawings and plans for glovebag abatement. Designated boundary limits for the asbestos work shall be established with rope or other continuous barriers and all other requirements for asbestos control areas shall be maintained, including area signage and boundary warning tape as specified in SET-UP DETAIL SHEET 11.

- a. In addition to requirements for negative pressure glovebag systems above, the Contractor shall attach HEPA vacuum systems or other devices to the bag to prevent collapse during removal of ACM from straight runs of piping and elbows and other connections.
- b. The negative pressure glove boxes used to remove ACM from pipe runs shall be fitted with gloved apertures and a bagging outlet and constructed with rigid sides from metal or other material which can withstand the weight of the ACM and water used during removal. A negative pressure shall be created in the system using a HEPA filtration system. The box shall be smoke tested for leaks prior to each use.

3.6.5.2 Wrap and Cut Operation

Wrap and cut operations shall be as shown in SETUP DETAIL SHEET 10. Prior to cutting pipe, the asbestos-containing insulation shall be wrapped with polyethylene and securely sealed with duct tape to prevent asbestos becoming airborne as a result of the cutting process. The following steps shall be taken: install glovebag, strip back sections to be cut 150 mm from point of cut, and cut pipe into manageable sections.

3.6.6 Class II Work

In addition to the requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the work.
- b. For indoor work, critical barriers shall be placed over all openings to the regulated area.
- c. Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

3.6.7 Specific Control Methods for Class II Work

In addition to requirements of paragraph Class II Work, Class II work shall be performed using the following methods:

3.6.7.1 Other Class II Jobs

The Contractor shall use the following work practices when performing Class II removal of flexible connector ACM: The material shall be thoroughly wetted with amended water prior and during its removal. The material shall be removed in an intact state. Cutting, abrading or breaking the material is prohibited. The ACM removed shall be immediately bagged or wrapped.

3.6.8 Cleaning After Asbestos Removal

After completion of all asbestos removal work, surfaces from which ACM has been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. Run-off water shall be collected and filtered through a dual filtration system. A first filter shall be provided to remove fibers 20 micrometers and larger, and a final filter provided that removes fibers 5 micrometers and larger. After the gross amounts of asbestos have been removed from every surface, remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the regulated area. When TSI and surfacing material has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Surfaces or locations which could harbor accumulations or residual asbestos dust shall be checked after vacuuming to verify that no asbestos-containing material remains; and shall be re-vacuumed as necessary to remove the ACM.

3.6.9 Class I Asbestos Work Response Action Detail Sheets

The following Class I Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Pipe and Fitting Insulation (using Glovebag): See Sheet 87

3.6.10 Class II Asbestos Work Response Action Detail Sheets

The following Class II Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Miscellaneous Asbestos-Containing Materials: See Sheet 45

3.7 FINAL CLEANING AND VISUAL INSPECTION

Upon completion of abatement, the regulated area shall be cleaned by collecting, packing, and storing all gross contamination; see SET-UP DETAIL SHEETS 9, 14 and 20. A final cleaning shall be performed using HEPA vacuum and wet cleaning of all exposed surfaces and objects in the regulated area. Upon completion of the cleaning, the Contractor shall conduct a visual pre-inspection of the cleaned area in preparation for a final inspection before final air clearance monitoring and recleaning, as necessary. Upon completion of the final cleaning, the Contractor and the Contracting Officer shall conduct a final visual inspection of the cleaned regulated area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection as specified on the SET-UP DETAIL SHEET 19. If the Contracting Officer rejects the clean regulated area as not meeting final cleaning requirements, the Contractor shall reclean as necessary and have a follow-on inspection conducted with the Contracting Officer. Recleaning and follow-up reinspection shall be at the Contractor's expense.

3.8 LOCKDOWN

Prior to removal of plastic barriers and after clean-up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall be spray applied to ceiling, walls, floors, and other surfaces in the regulated area.

3.9 EXPOSURE ASSESSMENT AND AIR MONITORING

3.9.1 General Requirements For Exposure

Exposure assessment, air monitoring and analysis of airborne concentration of asbestos fibers shall be performed in accordance with 29 CFR 1926, Section .1101, the Contractor's air monitoring plan, and as specified. Personal exposure air monitoring (collected at the breathing zone) that is representative of the exposure of each employee who is assigned to work within a regulated area shall be performed by the Contractor's Designated IH.

Breathing zone samples shall be taken for at least 25 percent of the workers in each shift, or a minimum of 2, whichever is greater. Air monitoring results at the 95 percent confidence level shall be calculated as shown in Table 2 at the end of this section. The Contractor shall provide an independent testing laboratory with qualified analysts and appropriate equipment to conduct sample analyses of air samples using the methods prescribed in 29 CFR 1926, Section.1101, to include NIOSH 84-100 Method 7400. Preabatement and abatement environmental air monitoring shall be performed by the Contractor's Designated IH. Final clearance environmental air monitoring, shall be performed by the Contractor's Designated IH. Environmental and final clearance air monitoring shall be performed using NIOSH 84-100 Method 7400 (PCM) with optional confirmation of results by NIOSH 84-100 Method 7402 (TEM). For environmental and final clearance, air monitoring shall be conducted at a sufficient velocity and duration to establish the limit of detection of the method used at 0.005 f/cc. Confirmation of asbestos fiber concentrations (asbestos f/cc) from environmental and final clearance samples collected and analyzed by NIOSH 84-100 Method 7400 (total f/cc) may be conducted using TEM in accordance with NIOSH 84-100 Method 7402. When such confirmation is conducted, it shall be from the same sample filter used for the NIOSH 84-100 Method 7400 PCM analysis. For all Contractor required environmental or final clearance air monitoring, confirmation of asbestos fiber concentrations, using NIOSH

84-100 Method 7402, shall be at the Contractor's expense. Monitoring may be duplicated by the Government at the discretion of the Contracting Officer. Results of breathing zone samples shall be posted at the job site and made available to the Contracting Officer. The Contractor shall maintain a fiber concentration inside a regulated area less than or equal to 0.1 f/cc expressed as an 8 hour, time-weighted average (TWA) during the conduct of the asbestos abatement. If fiber concentration rises above 0.1 f/cc, work procedures shall be investigated with the Contracting Officer to determine the cause. At the discretion of the Contracting Officer, fiber concentration may exceed 0.1 f/cc but shall not exceed 1.0 f/cc expressed as an 8-hour TWA. The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 f/cc, as averaged over a sampling period of 30 minutes. Should either an environmental concentration of 1.0 f/cc expressed as an 8-hour TWA or a personal excursion concentration of 1.0 f/cc expressed as a 30-minute sample occur inside a regulated work area, the Contractor shall stop work immediately, notify the Contracting Officer, and implement additional engineering controls and work practice controls to reduce airborne fiber levels below prescribed limits in the work area. Work shall not restart until authorized by the Contracting Officer.

3.9.2 Initial Exposure Assessment

The Contractor's Designated IH shall conduct an exposure assessment immediately before or at the initiation of an asbestos abatement operation to ascertain expected exposures during that operation. The assessment shall be completed in time to comply with the requirements which are triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure that all control systems planned are appropriate for that operation. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the Contractor which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of PELs, or otherwise makes a negative exposure assessment, the Contractor shall presume that employees are exposed in excess of the PEL-TWA and PEL-Excursion Limit.

3.9.3 Negative Exposure Assessment

The Contractor shall provide a negative exposure assessment for the specific asbestos job which will be performed. The negative exposure assessment shall be provided within 2 days of the initiation of the project and conform to the following criteria:

- a. Objective Data: Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the PEL-TWA and PEL-Excursion Limit under those work conditions having the greatest potential for releasing asbestos.
- b. Prior Asbestos Jobs: Where the Contractor has monitored prior asbestos jobs for the PEL and the PEL-Excursion Limit within 12 months of the current job, the monitoring and analysis were performed in compliance with asbestos standard in effect; the data were obtained during work operations conducted under workplace

conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations; the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job; and these data show that under the conditions prevailing and which will prevail in the current workplace, there is a high degree of certainty that the monitoring covered exposure from employee exposures will not exceed the PEL-TWA and PEL-Excursion Limit.

- c. Initial Exposure Monitoring: The results of initial exposure monitoring of the current job, made from breathing zone air samples that are representative of the 8-hour PEL-TWA and 30-minute short-term exposures of each employee. The monitoring covered exposure from operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

3.9.4 Preabatement Environmental Air Monitoring

Preabatement environmental air monitoring shall be established 1 day prior to the masking and sealing operations for each regulated area to determine background concentrations before abatement work begins. As a minimum, preabatement air samples shall be collected using NIOSH 84-100 Method 7400, PCM at these locations: outside the building; inside the building, but outside the regulated area perimeter; and inside each regulated work area. The PCM samples shall be analyzed within 24 hours; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH 84-100 Method 7402 (TEM).

3.9.5 Environmental Air Monitoring During Abatement

Until an exposure assessment is provided to the Contracting Officer, environmental air monitoring shall be conducted at locations and frequencies that will accurately characterize any evolving airborne asbestos fiber concentrations. The assessment shall demonstrate that the product or material containing asbestos minerals, or the abatement involving such product or material, cannot release airborne asbestos fibers in concentrations exceeding 0.01 f/cc as a TWA under those work conditions having the greatest potential for releasing asbestos. The monitoring shall be at least once per shift at locations including, but not limited to, close to the work inside a regulated area; outside entrances to a regulated area; close to glovebag operations; representative locations outside of the perimeter of a regulated area; inside clean room; and at the exhaust discharge point of local exhaust system ducted to the outside of a containment (if used). If the sampling outside regulated area shows airborne fiber levels have exceeded background or 0.01 f/cc, whichever is greater, work shall be stopped immediately, and the Contracting Officer notified. The condition causing the increase shall be corrected. Work shall not restart until authorized by the Contracting Officer.

3.9.6 Final Clearance Air Monitoring

Prior to conducting final clearance air monitoring, the Contractor and the Contracting Officer shall conduct a final visual inspection of the regulated area where asbestos abatement has been completed. The final visual inspection shall be as specified in SET-UP DETAIL SHEET 19. Final clearance air monitoring shall not begin until acceptance of the

Contractor's final cleaning by the Contracting Officer. The Contractor's Designated IH shall conduct final clearance air monitoring using aggressive air sampling techniques as defined in EPA 560/5-85-024 or as otherwise required by federal or state requirements. The sampling and analytical method used will be NIOSH 84-100 Method 7400 (PCM).

3.9.6.1 Final Clearance Requirements, NIOSH PCM Method

For PCM sampling and analysis using NIOSH 84-100 Method 7400, the fiber concentration inside the abated regulated area, for each airborne sample, shall be less than 0.01 f/cc. The abatement inside the regulated area is considered complete when every PCM final clearance sample is below the clearance limit. If any sample result is greater than 0.01 total f/cc, the asbestos fiber concentration (asbestos f/cc) shall be confirmed from that same filter using NIOSH 84-100 Method 7402 (TEM) at Contractor's expense. If any confirmation sample result is greater than 0.01 asbestos f/cc, abatement is incomplete and cleaning shall be repeated. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done.

3.9.6.2 Air Clearance Failure

If clearance sampling results fail to meet the final clearance requirements, the Contractor shall pay all costs associated with the required recleaning, resampling, and analysis, until final clearance requirements are met.

3.9.7 Air-Monitoring Results and Documentation

Air sample fiber counting shall be completed and results provided within 24 hours (breathing zone samples), and 48 hours (environmental/clearance monitoring) after completion of a sampling period. The Contracting Officer shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be provided within 5 working days of the date of collection. The written results shall be signed by testing laboratory analyst, testing laboratory principal and the Contractor's Designated IH. The air sampling results shall be documented on a Contractor's daily air monitoring log. The daily air monitoring log shall contain the following information for each sample:

- a. Sampling and analytical method used;
- b. Date sample collected;
- c. Sample number;
- d. Sample type: BZ = Breathing Zone (Personal), P = Preabatement, E = Environmental, C = Abatement Clearance;
- e. Location/activity/name where sample collected;
- f. Sampling pump manufacturer, model and serial number, beginning flow rate, end flow rate, average flow rate (L/min);
- g. Calibration date, time, method, location, name of calibrator, signature;
- h. Sample period (start time, stop time, elapsed time (minutes));

- i. Total air volume sampled (liters);
- j. Sample results (f/cc and S/mm square) if EPA methods are required for final clearance;
- k. Laboratory name, location, analytical method, analyst, confidence level. In addition, the printed name and a signature and date block for the Industrial Hygienist who conducted the sampling and for the Industrial Hygienist who reviewed the daily air monitoring log verifying the accuracy of the information.

3.10 CLEARANCE CERTIFICATION

When asbestos abatement is complete, ACM waste is removed from the regulated areas, and final clean-up is completed, the Contracting Officer will certify the areas as safe before allowing the warning signs and boundary warning tape to be removed. The Contractor and the Contracting Officer shall visually inspect all surfaces within the containment for residual material or accumulated debris. The Contractor shall reclean all areas showing dust or residual materials. The Contracting Officer will certify in writing that the area is safe before unrestricted entry is permitted. The Government will have the option to perform monitoring to certify the areas are safe before entry is permitted.

3.11 CLEANUP AND DISPOSAL

3.11.1 Title to ACM Materials

ACM material resulting from abatement work, except as specified otherwise, shall become the property of the Base and shall be disposed of as specified and in accordance with applicable federal, state and local regulations.

3.11.2 Collection and Disposal of Asbestos

All ACM waste shall be collected and including contaminated wastewater filters, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected and placed in leak-tight containers such as double plastic bags (see DETAIL SHEET 9A); sealed double wrapped polyethylene sheet (see DETAIL 9B); sealed fiberboard boxes (see DETAIL SHEET 9C); or other approved containers. Waste within the containers shall be wetted in case the container is breached. Asbestos-containing waste shall be disposed of at the approved asbestos landfill on base. An area for asbestos waste disposal has been established on the southwest corner of South Mountain. For temporary storage, sealed impermeable containers shall be stored in an asbestos waste load-out unit or in a storage/transportation conveyance (i.e., dumpster, roll-off waste boxes, etc.) in a manner acceptable to and in an area assigned by the Contracting Officer. Procedure for hauling and disposal shall comply with 40 CFR 61, Subpart M, state, regional, and local standards.

3.11.3 Weigh Bill and Delivery Tickets

Copies of weigh bills and delivery tickets shall be submitted to the Contracting Officer during the progress of the work. The Contractor shall furnish the Contracting Officer scale tickets for each load of ACM weighed and certified. These tickets shall include tare weight; identification mark for each vehicle weighed; and date, time and location of loading and unloading. Tickets shall be furnished at the point and time individual trucks arrive at the worksite. A master log of all vehicle loading shall

be furnished for each day of loading operations. Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified weigh bills and/or certified tickets and manifests of all ACM actually disposed by the Contractor for this contract.

3.11.4 Asbestos Waste Shipment Record

The Contractor shall complete and provide the Contracting Officer final completed copies of the Waste Shipment Record for all shipments of waste material as specified in the Asbestos Operating Plan for Thule Air Base, within 3 days of delivery to the landfill. Each Waste Shipment Record shall be signed and dated by the Contractor, the waste transporter and disposal facility operator. Each waste shipment record must provide the following information:

- a. Name, facility no., and phone number of the generator.
- b. The type of asbestos waste materials generated.
- c. If from a demolition or renovation, indication of the amount (cubic meters/cubic yards) of asbestos that is friable or non-friable asbestos material.
- d. The number of containers used to transport the asbestos materials, and the type of container used:
 - DM - Metal drums, barrels
 - DP - Plastic drums, barrels
 - BA - 6 mil plastic bags or wrapping
- e. Date of disposal at the designated asbestos waste site.

Proper forms and procedures shall be provided to Contractor by Contracting Officer prior to the start of abatement work.

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 1 of 2

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER 1
2. LOCATION OF WORK TASK Building 103
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Thermal Pipe and Fitting Insulation
 - a. Type of Asbestos Amosite and Chrysotile
 - b. Percent asbestos content 10-45%
4. ABATEMENT TECHNIQUE TO BE USED REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class I
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK
Friable X Non-friable Category I _____
Non-friable Category II _____
7. FORM IA and CONDITION OF ACM: GOOD _____ FAIR X POOR _____
8. QUANTITY: METERS 156, SQUARE METERS _____
- 8a. QUANTITY: LINEAR FT. 510, SQUARE FT. _____
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 87
10. SET-UP DETAIL SHEET NUMBERS
FOR WORK TASK 1, 9A, 9B, 10, 11, 12, 13, 14,
15, 19, 20, 21, _____, _____.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet 2 of 2

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER 1
2. LOCATION OF WORK TASK Building 103
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: Flexible Connector
 - a. Type of Asbestos Chrysotile
 - b. Percent asbestos content 35-50%
4. ABATEMENT TECHNIQUE TO BE USED REM
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK Class II
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK
Friable _____ Non-friable Category I _____
Non-friable Category II X
7. FORM IA and CONDITION OF ACM: GOOD X FAIR _____ POOR _____
8. QUANTITY: METERS _____, SQUARE METERS 1
- 8a. QUANTITY: LINEAR FT. _____, SQUARE FT. _____
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK 45
10. SET-UP DETAIL SHEET NUMBERS
FOR WORK TASK 1, 9A, 9B, 11, 12, 13, 14, 15,
19, 20, 21, _____.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 2

FORMULA FOR CALCULATION OF THE 95 PERCENT CONFIDENCE LEVEL
(Reference: NIOSH 7400)

$$\text{Fibers/cc (01.95 percent CL)} = X + (X) * (1.645) * (CV)$$

Where: $X = ((E)(AC)) / ((V)(1000))$

$$E = ((F/Nf) - (B/Nb)) / Af$$

CV = The precision value; 0.45 shall be used unless the analytical laboratory provides the Contracting Officer with documentation (Round Robin Program participation and results) that the laboratory's precision is better.

AC = Effective collection area of the filter in square millimeters

V = Air volume sampled in liters

E = Fiber density on the filter in fibers per square millimeter

F/Nf = Total fiber count per graticule field

B/Nb = Mean field blank count per graticule field

Af = Graticule field area in square millimeters

$$\text{TWA} = C1/T1 + C2/T2 = Cn/Tn$$

Where: C = Concentration of contaminant

T = Time sampled.

TABLE 3
NIOSH METHOD 7400
PCM ENVIRONMENTAL AIR SAMPLING PROTOCOL (NON-PERSONAL)

Sample Location	Minimum No. of Samples	Filter Pore Size (Note 1)	Min. Vol. (Note 2) (Liters)	Sampling Rate (liters/min.)
Inside Abatement Area	0.5/140 Square Meters (Notes 3 & 4)	0.45 microns	3850	2-16
Each Room in 1 Abatement Area Less than 140 Square meters		0.45 microns	3850	2-16
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

Notes:

1. Type of filter is Mixed Cellulose Ester.
2. Ensure detection limit for PCM analysis is established at 0.005 fibers/cc.
3. One sample shall be added for each additional 140 square meters. (The corresponding I-P units are 5/1500 square feet).
4. A minimum of 5 samples are to be taken per abatement area, plus 2 field blanks.

TABLE 4
EPA AHERA METHOD: TEM AIR SAMPLING PROTOCOL

Location Sampled	Minimum No. of Samples	Filter Pore Size	Min. Vol. (Liters)	Sampling Rate (liters/min.)
Inside Abatement Area	5	0.45 microns	1500	2-16
Outside Abatement Area	5	0.45 microns	1500	2-16
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

Notes:

1. Type of filter is Mixed Cellulose Ester.
2. The detection limit for TEM analysis is 70 structures/square mm.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ CONTRACT NO. _____
PROJECT ADDRESS _____
CONTRACTOR FIRM NAME _____
EMPLOYEE'S NAME _____, _____, _____,
(Print) (Last) (First) (MI)

Social Security Number: _____-_____-_____,

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH TYPES OF LUNG DISEASE AND CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NONSMOKING PUBLIC.

Your employer's contract for the above project requires that you be provided and you complete formal asbestos training specific to the type of work you will perform and project specific training; that you be supplied with proper personal protective equipment including a respirator, that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you. The Contractor's Designated Industrial Hygienist will check the block(s) for the type of formal training you have completed. Review the checked blocks prior to signing this certification.

FORMAL TRAINING:

_____ a. For Competent Persons and Supervisors: I have completed EPA's Model Accreditation Program (MAP) training course, "Contractor/Supervisor", that meets this State's requirements.

_____ b. For Workers:

_____ (1) For OSHA Class I work: I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (2) For OSHA Class II work (where there will be abatement of more than one type of Class II materials, i.e., roofing, siding, floor tile, etc.): I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (3) For OSHA Class II work (there will only be abatement of one type of Class II material):

_____ (a) I have completed an 8-hour training class on the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls of 29 CFR 1926, Section .1101(g) and hands-on training.

_____ (b) I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (4) For OSHA Class III work: I have completed at least a 16-hour course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, Section .92(a)(2) and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101, and hands-on training.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

_____ (5) For OSHA Class IV work: I have completed at least a 2-hr course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, (a)(1), and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101(g) and hands-on training.

_____ c. Workers, Supervisors and the Designated Competent Person: I have completed annual refresher training as required by EPA's MAP that meets this State's requirements.

PROJECT SPECIFIC TRAINING:

_____ I have been provided and have completed the project specific training required by this Contract. My employer's Designated Industrial Hygienist and Designated Competent Person conducted the training.

RESPIRATORY PROTECTION:

_____ I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair and contact lens use policy of my employer.

RESPIRATOR FIT-TEST TRAINING:

_____ I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION:

_____ I have had a medical examination within the last twelve months which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's Industrial Hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

_____ were no limitations to performing the required work tasks.

_____ were identified physical limitations to performing the required work tasks.

Date of the medical examination _____

Employee Signature _____ date _____

Contractor's Industrial

Hygienist Signature _____ date _____

-- End of Section --

SECTION 13282N

LEAD IN CONSTRUCTION

08/03

PART 1 GENERAL

NOTE: Based upon the age of the building and sampling, there are some painted materials that could be identified as lead-based paint (LBP). However, no on-site abatement of individual painted components is planned. The building should be demolished with paint components in-place. The Contractor should be aware of the paint (lead-based or lead-containing) during the demolition activities. The Contractor is responsible to perform work according to all applicable regulations or laws.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z88.2 (1992) Respiratory Protection

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1926.103	Respiratory Protection
29 CFR 1926.21	Safety Training and Education
29 CFR 1926.33	Access to Employee Exposure and Medical Records
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts, and Mists
29 CFR 1926.59	Hazard Communication
29 CFR 1926.62	Lead
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
40 CFR 261	Identification and Listing of Hazardous Waste

UNDERWRITERS LABORATORIES (UL)

UL 586 (1996; Rev thru Apr 2000) High-Efficiency, Particulate, Air Filter Units

THULE AB REGULATIONS

- 1) Standards Governing Environmental Protection for U.S. Installations in Greenland
- 2) Final Governing Standards (FGS), Chapter 15, Paragraph 15.4

3) Thule AB Lead Paint Operating and Management Plans

1.2 DEFINITIONS

1.2.1 Action Level

Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8 hour period.

1.2.2 Area Sampling

Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel (approximately 1.5 to 1.8 meters above the floor).

1.2.3 Competent Person (CP)

As used in this section, refers to a person employed by the Contractor who is trained in the recognition and control of lead hazards in accordance with current federal, State, and local regulations and has the authority to take prompt corrective actions to control the lead hazard. A Certified Industrial Hygienist (CIH) certified by the American Board of Industrial Hygiene or a Certified Safety Professional (CSP) certified by the Board of Certified Safety Professionals is the best choice.

1.2.4 Contaminated Room

Refers to a room for removal of contaminated personal protective equipment (PPE).

1.2.5 Decontamination Shower Facility

That facility that encompasses a clean clothing storage room, and a contaminated clothing storage and disposal rooms, with a shower facility in between.

1.2.6 High Efficiency Particulate Arrestor (HEPA) Filter Equipment

HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated particulate. A high efficiency particulate filter demonstrates at least 99.97 percent efficiency against 0.3 micron or larger size particles.

1.2.7 Lead

Metallic lead, inorganic lead compounds, and organic lead soaps. Excludes other forms of organic lead compounds.

1.2.8 Lead Control Area

A system of control methods to prevent the spread of lead dust, paint chips or debris to adjacent areas that may include temporary containment, floor or ground cover protection, physical boundaries, and warning signs to prevent unauthorized entry of personnel. HEPA filtered local exhaust equipment may be used as engineering controls to further reduce personnel exposures or building/outdoor environmental contamination.

1.2.9 Lead Permissible Exposure Limit (PEL)

Fifty micrograms per cubic meter of air as an 8 hour time weighted average as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a work day, the PEL shall be determined by the following formula:

$$\text{PEL (micrograms/cubic meter of air)} = 400/\text{No. hrs worked per day}$$

1.2.10 Material Containing Lead/Paint with Lead (MCL/PWL)

Any material, including paint, which contains lead as determined by the testing laboratory using a valid test method. The requirements of this section does not apply if no detectable levels of lead are found using a quantitative method for analyzing paint or MCL using laboratory instruments with specified limits of detection (usually 0.01%). An X-Ray Fluorescence (XRF) instrument is not considered a valid test method.

1.2.11 Personal Sampling

Sampling of airborne lead concentrations within the breathing zone of an employee to determine the 8 hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 150 to 225 mm 6 to 9 inches and centered at the nose or mouth of an employee.

1.2.12 Physical Boundary

Area physically roped or partitioned off around lead control area to limit unauthorized entry of personnel.

1.3 DESCRIPTION

1.3.1 Description of Work

Construction activities impacting PWL or material containing lead which are covered by this specification include the demolition and/or removal of material containing lead in good to poor condition, located at Building 103.

1.3.2 Coordination with Other Work

The contractor shall coordinate with work being performed in adjacent areas. Coordination procedures shall be explained in the Plan and shall describe how the Contractor will prevent lead exposure to other contractors and/or Government personnel performing work unrelated to lead activities.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Lead Compliance Plan including CP approval

(signature, date, and certification number); G

Competent Person qualifications; G

Training Certification of workers and supervisors; G

lead waste management plan; G

written evidence that TSD is approved for lead disposal; G

Certification of Medical Examinations; G

SD-06 Test Reports

sampling results; G

Occupational and Environmental Assessment Data Report; G

SD-07 Certificates

Testing laboratory qualifications; G

Clearance Certification; G

SD-11 Closeout Submittals

Completed and signed hazardous waste manifest from treatment or disposal facility; G

Waste turn-in documents or weight tickets for non-hazardous wastes that are disposed of at sanitary or construction and demolition landfills; G

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 Competent Person (CP)

Submit name, address, and telephone number of the CP selected to perform responsibilities specified in paragraph entitled "Competent Person (CP) Responsibilities." Provide documented construction project-related experience with implementation of OSHA's Lead in Construction standard (29 CFR 1926.62) which shows ability to assess occupational and environmental exposure to lead, experience with the use of respirators, personal protective equipment and other exposure reduction methods to protect employee health. Submit proper documentation that the CP is trained and certified in accordance with federal, State and local laws. .

1.5.1.2 Training Certification

Submit a certificate for each worker and supervisor, signed and dated by the accredited training provider, stating that the employee has received the required lead training specified in 29 CFR 1926.62(l).

1.5.1.3 Testing Laboratory

Submit the name, address, and telephone number of the testing laboratory selected to perform the air analysis, testing, and reporting of airborne concentrations of lead. Use a laboratory participating in the EPA

National Lead Laboratory Accreditation Program (NLLAP) by being accredited by either the American Association for Laboratory Accreditation (A2LA) or the American Industrial Hygiene Association (AIHA) and that is successfully participating in the Environmental Lead Proficiency Analytical Testing (ELPAT) program to perform sample analysis. Laboratories selected to perform blood lead analysis shall be OSHA approved.

1.5.2 Requirements

1.5.2.1 Competent Person (CP) Responsibilities

- a. Verify training meets all federal, State, and local requirements.
- b. Review and approve Lead Compliance Plan for conformance to the applicable referenced standards.
- c. Continuously inspect PWL or MCL work for conformance with the approved plan.
- d. Perform (or oversee performance of) air sampling. Recommend upgrades or downgrades (whichever is appropriate based on exposure) on the use of PPE (respirators included) and engineering controls.
- e. Ensure work is performed in strict accordance with specifications at all times.
- f. Control work to prevent hazardous exposure to human beings and to the environment at all times.
- g. Supervise final cleaning of the lead control area, take clearance wipe samples if necessary; review clearance sample results and make recommendations for further cleaning.
- h. Certify the conditions of the work as called for elsewhere in this specification.

1.5.2.2 Lead Compliance Plan

Submit a detailed job-specific plan of the work procedures to be used in the disturbance of PWL or MCL. The plan shall include a sketch showing the location, size, and details of lead control areas, critical barriers, physical boundaries, location and details of decontamination facilities, viewing ports, and mechanical ventilation system. Include a description of equipment and materials, work practices, controls and job responsibilities for each activity from which lead is emitted. Include in the plan, eating, drinking, smoking, hygiene facilities and sanitary procedures, interface of trades, sequencing of lead related work, collected waste water and dust containing lead and debris, air sampling, respirators, personal protective equipment, and a detailed description of the method of containment of the operation to ensure that lead is not released outside of the lead control area. Include site preparation, cleanup and clearance procedures. Include occupational and environmental sampling, training and strategy, sampling and analysis strategy and methodology, frequency of sampling, duration of sampling, and qualifications of sampling personnel in the air sampling portion of the plan. Include a description of arrangements made among contractors on multicontractor worksites to inform affected employees and to clarify responsibilities to control exposures.

1.5.2.3 Occupational and Environmental Assessment Data Report

If initial monitoring is necessary, submit occupational and environmental sampling results to the Contracting Officer within three working days of collection, signed by the testing laboratory employee performing the analysis, the employee that performed the sampling, and the CP.

In order to reduce the full implementation of 29 CFR 1926.62, the Contractor shall provide documentation. Submit a report that supports the determination to reduce full implementation of the requirements of 29 CFR 1926.62 and supporting the Lead Compliance Plan.

a. The initial monitoring shall represent each job classification, or if working conditions are similar to previous jobs by the same employer, provide previously collected exposure data that can be used to estimate worker exposures per 29 CFR 1926.62. The data shall represent the worker's regular daily exposure to lead for stated work.

b. Submit worker exposure data gathered during the task based trigger operations of 29 CFR 1926.62 with a complete process description. This includes manual demolition, manual scraping, manual sanding, heat gun, power tool cleaning, rivet busting, cleanup of dry expendable abrasives, abrasive blast enclosure removal, abrasive blasting, welding, cutting and torch burning where lead containing coatings are present.

c. The initial assessment shall determine the requirement for further monitoring and the need to fully implement the control and protective requirements including the lead compliance plan per 29 CFR 1926.62.

1.5.2.4 Medical Examinations

Initial medical surveillance as required by 29 CFR 1926.62 shall be made available to all employees exposed to lead at any time (1 day) above the action level. Full medical surveillance shall be made available to all employees on an annual basis who are or may be exposed to lead in excess of the action level for more than 30 days a year or as required by 29 CFR 1926.62. Adequate records shall show that employees meet the medical surveillance requirements of 29 CFR 1926.33, 29 CFR 1926.62 and 29 CFR 1926.103. Provide medical surveillance to all personnel exposed to lead as indicated in 29 CFR 1926.62. Maintain complete and accurate medical records of employees for the duration of employment plus 30 years.

1.5.2.5 Training

Train each employee performing work that disturbs lead, who performs MCL/PWL disposal, and air sampling operations prior to the time of initial job assignment and annually thereafter, in accordance with 29 CFR 1926.21, 29 CFR 1926.62, and State and local regulations where appropriate.

1.5.2.6 Respiratory Protection Program

a. Provide each employee required to wear a respirator a respirator fit test at the time of initial fitting and at least annually thereafter as required by 29 CFR 1926.62.

b. Establish and implement a respiratory protection program as required by ANSI Z88.2, 29 CFR 1926.103, 29 CFR 1926.62, and 29 CFR 1926.55.

1.5.2.7 Hazard Communication Program

Establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.

1.5.2.8 Lead Waste Management

The Lead Waste Management Plan shall comply with applicable requirements of local hazardous waste regulations (namely Thule AB). and address:

- a. Identification and classification of wastes associated with the work.
- b. Estimated quantities of wastes to be generated and disposed of.
- c. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact. Furnish two copies of local hazardous waste manifests.
- d. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
- e. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
- f. Spill prevention, containment, and cleanup contingency measures including a health and safety plan to be implemented in accordance with 29 CFR 1926.65.
- g. Work plan and schedule for waste containment, removal and disposal. Proper containment of the waste includes using acceptable waste containers (e.g., 55-gallon drums) as well as proper marking/labeling of the containers. Wastes shall be cleaned up and containerized daily.
- h. Include any process that may alter or treat waste rendering a hazardous waste non hazardous.
- i. Unit cost for hazardous waste disposal according to this plan.

1.5.2.9 Environmental, Safety and Health Compliance

In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, State, and local authorities regarding lead. Comply with the applicable requirements of the current issue of 29 CFR 1926.62. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work. Where specification requirements and the referenced documents vary, the most stringent requirement shall apply. The following local laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead-contaminated materials apply:

- a. Standards Governing Environmental Protection for U.S. Installations in Greenland
- b. Final Governing Standards (FGS), Chapter 15, Paragraph 15.4
- c. Thule AB Lead Paint Operating and Management Plans

1.5.3 Pre-Construction Conference

Along with the CP, meet with the Contracting Officer to discuss in detail the Lead Waste Management Plan and the Lead Compliance Plan, including procedures and precautions for the work.

1.6 EQUIPMENT

1.6.1 Respirators

Furnish appropriate respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing lead dust, fume and mist. Respirators shall comply with the requirements of 29 CFR 1926.62.

1.6.2 Special Protective Clothing

Furnish personnel who will be exposed to lead-contaminated dust with proper disposable protective whole body clothing, head covering, gloves, eye, and foot coverings as required by 29 CFR 1926.62. Furnish proper disposable plastic or rubber gloves to protect hands. Reduce the level of protection only after obtaining approval from the CP.

1.6.3 Rental Equipment Notification

If rental equipment is to be used during PWL or MCL handling and disposal, notify the rental agency in writing concerning the intended use of the equipment.

1.6.4 Vacuum Filters

UL 586 labeled HEPA filters.

1.6.5 Equipment for Government Personnel

Furnish the Contracting Officer with two complete sets of personal protective equipment (PPE) daily, as required herein, for entry into and inspection of the lead removal work within the lead controlled area. Personal protective equipment shall include disposable whole body covering, including appropriate foot, head, eye, and hand protection. PPE shall remain the property of the Contractor. The Government will provide respiratory protection for the Contracting Officer.

1.7 PROJECT/SITE CONDITIONS

1.7.1 Protection of Existing Work to Remain

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Protection

3.1.1.1 Notification

a. Notify the Contracting Officer 20 days prior to the start of any lead work.

3.1.1.2 Lead Control Area

a. Physical Boundary - Provide physical boundaries around the lead control area by roping off the area designated in the work plan or providing curtains, portable partitions or other enclosures to ensure that lead will not escape outside of the lead control area.

b. Warning Signs - Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

3.1.1.3 Furnishings

The Government will remove furniture and equipment from the building before lead work begins.

3.1.1.4 Decontamination Shower Facility

Provide clean and contaminated change rooms and shower facilities in accordance with this specification and 29 CFR 1926.62.

3.1.1.5 Eye Wash Station

Where eyes may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes shall be provided within the work area.

3.1.1.6 Personnel Protection

Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking or application of cosmetics is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been appropriately trained and provided with protective equipment.

3.2 ERECTION

3.2.1 Lead Control Area Requirements

Establish a lead control area by completely establishing barriers and physical boundaries around the area or structure where PWL or MCL removal operations will be performed.

3.3 APPLICATION

3.3.1 Lead Work

Perform lead work in accordance with approved Lead Compliance Plan. Use procedures and equipment required to limit occupational exposure and environmental contamination with lead when the work is performed in accordance with 29 CFR 1926.62, and as specified herein. Dispose of all PWL or MCL and associated waste in compliance with federal, State, and local requirements.

3.3.2 Personnel Exiting Procedures

Whenever personnel exit the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn in the control area:

- a. Vacuum all clothing before entering the contaminated change room.
- b. Remove protective clothing in the contaminated change room, and place them in an approved impermeable disposal bag.
- c. Wash hands and face at the site.
- d. Change to clean clothes prior to leaving the clean clothes storage area.

3.4 FIELD QUALITY CONTROL

3.4.1 Tests

3.4.1.1 Air Sampling

Conduct sampling for lead in accordance with 29 CFR 1926.62 and as specified herein. Air sampling shall be directed or performed by the CP.

- a. The CP shall be on the job site directing the air sampling and inspecting the PWL or MCL removal work to ensure that the requirements of the contract have been satisfied during the entire PWL or MCL operation.
- b. Collect personal air samples on employees who are anticipated to have the greatest risk of exposure as determined by the CP. In addition, collect air samples on at least twenty-five percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
- c. Submit results of air samples, signed by the CP, within 72 hours after the air samples are taken.
- d. Conduct area air sampling daily, on each shift in which lead-based paint removal operations are performed, in areas immediately adjacent to the lead control area. Sufficient area monitoring shall be conducted to ensure unprotected personnel are not exposed at or above 30 micrograms per cubic meter of air. If 30 micrograms per cubic meter of air is reached or exceeded, stop work, correct the condition(s) causing the increased levels. Notify the Contracting Officer immediately. Determine if condition(s) require any further change in work methods. Removal work shall resume only after the CP and the

Contracting Officer give approval.

3.4.1.2 Testing of Material Containing Lead Residue

Test residue in accordance with 40 CFR 261 for hazardous waste.

NOTE: A composite sample of the various painted building components was obtained from the building. The sample was obtained for the purpose of characterizing the construction debris that will be generated during the demolition activities with respect to the disposal requirements of the painted items (i.e., hazardous or non-hazardous). The anticipated waste stream was characterized for leachable lead through toxicity characteristic leaching procedure (TCLP) analysis. The TCLP results did not exceed the criteria for leachable lead. Based upon the results, the demolition waste from this building would not need to be reported as a hazardous waste in accordance with 40 CFR 261 for hazardous waste. See the Hazardous Material Survey Report. The Contractor will be required to confirm this testing prior to disposing of the construction debris as normal construction waste.

3.5 CLEANING AND DISPOSAL

3.5.1 Cleanup

Maintain surfaces of the lead control area free of accumulations of dust and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use pressurized air to clean up the area. At the end of each shift and when the lead operation has been completed, clean the controlled area of visible contamination by control methods as indicated by the Lead Compliance Plan. Reclean areas showing debris. If adjacent areas become contaminated at any time during the work, clean, and visually inspect all contaminated areas. The CP shall then certify in writing that the area has been cleaned of lead contamination before releasing area.

3.5.1.1 Clearance Certification

The CP shall certify in writing that air samples collected outside the lead control area during paint removal operations are less than 30 micrograms per cubic meter of air; the respiratory protection used for the employees was adequate; the work procedures were performed in accordance with 29 CFR 1926.62; and that there were no visible accumulations of material and dust containing lead left in the work site. Do not remove the lead control area or roped off boundary and warning signs prior to the Contracting Officer's acknowledgement of receipt of the CP certification.

3.5.2 Disposal

- a. All material, whether hazardous or non-hazardous shall be disposed in accordance with all laws and provisions and all federal, State or local (Thule AB) regulations. Ensure all waste is properly characterized. The result of each waste characterization (TCLP for RCRA materials) will dictate disposal requirements.

NOTE: The Contractor should bid the project based upon the information provided that all of the construction waste will be considered non-hazardous. The Contractor will be required to confirm this testing prior to disposing of the construction debris as normal construction waste. The normal construction waste will be delivered to a waste disposal site

on Thule AB as specified by the Contracting Officer. In the event that the waste is reported differently at the time of the project, the Contractor will be compensated and provided directions for disposal under special conditions of this contract.

3.5.2.1 Disposal Documentation

Contractor shall provide a certificate that the waste was accepted by the disposal facility. Provide turn-in documents or weight tickets for non-hazardous waste disposal.

3.5.2.2 Payment for Waste

Payment for disposal of non-hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of non-hazardous waste delivered is returned and a copy is furnished to the Government.

-- End of Section --

Thule FY05 Dormitory Replacement Geotechnical Investigation Thule Air Base, Greenland

for

United States Army Corps of Engineers
New York District

July 2004



Baker

Engineering & Energy

Michael Baker Jr., Inc.
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907-273-1600

102396-MBJ-RPT-001

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Appendices

Appendix A Boring Logs

Appendix B Analytical Reports

Appendix C Freeze and Thaw Calculations

1.0 Introduction

Michael Baker Jr., Inc. (Baker) conducted a geotechnical investigation, for the United States Army Corps of Engineers (USACE) New York District, at the proposed site of the FY05 Dormitory Replacement at Thule Air Base in Greenland. The program consisted of drilling, sampling, and recording soil temperatures from five geotechnical borings and preparing engineering design recommendations.

This report presents the results and design recommendations of the geotechnical investigation conducted for the proposed dormitory. The objective of this geotechnical investigation was to explore the subsurface soil conditions at the site and provide foundation design recommendations. The geotechnical program consisted of testing the materials for pertinent engineering properties and to provide data for engineering design recommendations. The geotechnical work was divided into the following tasks:

- Drilling, field classification, and sampling borings;
- Measuring and recording soil temperatures;
- Laboratory testing; and
- Data analysis and report preparation.

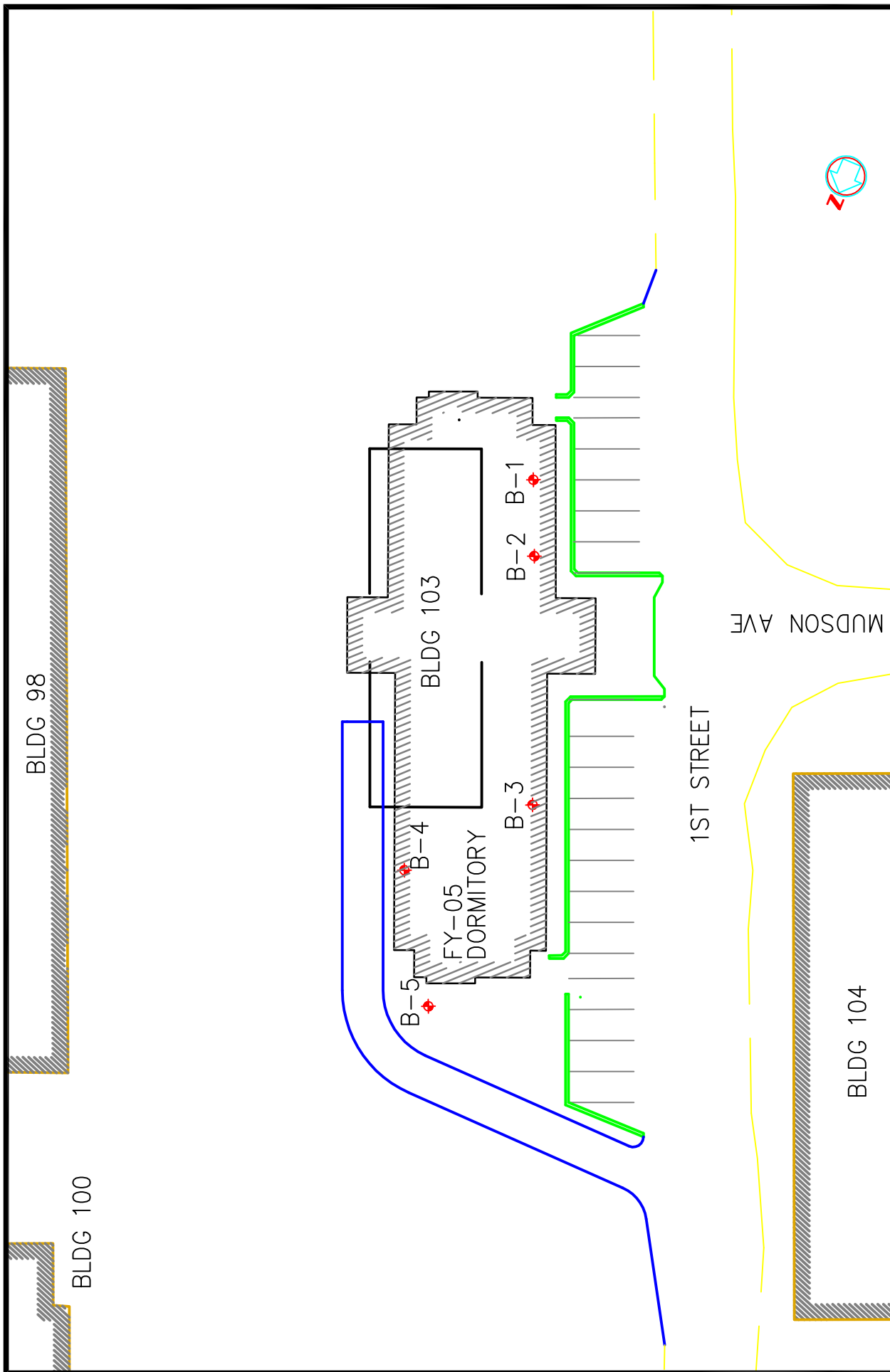
Drilling locations are identified on the Site Plan (Figure 1). Boring logs, analytical reports, and thermal calculations are presented in Appendix A, B, and C, respectively.

1.1 Project Background

Baker has been contracted by the USACE to provide a dormitory that will meet the current U.S. Air Force and user functional criteria appropriate for arctic conditions. The dormitory is required to support the Ballistic Missile Early Warning System (BMEWS) and Detachment 3 (DET-3) missions.

The dormitory project will consist of the design and construction of the dormitory in arctic conditions, parking areas, site improvements, and minimal landscaping. The proposed dormitory is a three-story building approximately 18 meters tall. The footprint of the building is approximately 1,300 square meters and will consist of a steel framed structure. The building will contain reinforced concrete floor and raised foundation, composite walls and a sloped metal roof.

The Cold Regions Research and Engineering Laboratory (CRREL) interpreted ground penetrating radar (GPR) data, which suggested a potential ice lens at 5 to 6 meters below ground surface (BGS) at the proposed site. As part of Baker's contract, a subsurface investigation was required to assess the soil, groundwater, and permafrost conditions at the site with the aim of designing the foundation for the new dormitory. A minimum of



BOREHOLE LOCATIONS

FY-05 DORMITORY SITE PLAN

Baker

Michael Baker Jr., Inc.
A Unit of Michael Baker Corporation

five soil borings, ranging in depth from 7.6 to 15.2 meters, were to be drilled throughout the site to investigate the nature of the suspected ice lens and aid in the foundation design.

1.2 Site Location

The project site is located on the north side of 1st Street, at the intersection of Mudson Avenue, at Thule Air Base, Greenland. Thule Air Base is the United States Space Command's northernmost base (76° 32' North Latitude, 68° 50' West Longitude) located 695 miles north of the Arctic Circle, and 947 miles south of the North Pole on the northwest side of the island of Greenland. Thule Air Base is within the Mid-Atlantic time zone.

1.3 Project Description

The objective of the geotechnical investigation was to explore the subsurface soil conditions at the proposed dormitory site. The geotechnical investigation team was on site between March 18 and April 2, 2004. Drilling was conducted between March 23 and 28, 2004. Thermistor (soil temperatures) readings were recorded between June 22 and 29, 2004.

Warren George, Inc. of Jersey City, New Jersey, performed the drilling services. Five borings were drilled during the program and varied in depth from 6.1 to 7.8 meters BGS. Borings were drilled using an Acker Soil XLT trailer mounted drill rig equipped with 10.2 cm outside diameter solid stem augers. The drill rig was mounted onto a double axle trailer and transported from boring to boring by Greenland Contractors using a tractor. Samples were collected with 61 cm long split spoon samplers advanced with a weighted hammer. The hammer was operated manually using a CAT-Head.

- Soil samples were collected with a 3.6 cm inside diameter (5.1 cm outside diameter) sample spoon driven by a 63.5 kg hammer falling 76.2 cm.
- Standard penetration tests (SPT) were conducted on each boring.

1.4 Scope of Project

Soil borings were drilled at five locations to obtain sufficient subsurface soil classifications and engineering properties for geotechnical analysis and engineering design recommendations. In particular, borings were identified for permafrost conditions, thaw consolidation characteristics, water table information, and general geologic structure of the area. At a minimum, split spoon samplers were driven at 1.5-meter intervals for collection of undisturbed soil. A Baker geotechnical engineer logged the soil in compliance with the Unified Soil Classification System, American Society of Testing and Materials (ASTM) D2487.

Soil samples were collected in the field for moisture content, particle size analysis (sieve and hydrometer), frozen unit weight, thaw consolidation, and pore water salinity.

American Association of State Highway and Transportation (AASHTO) accredited laboratory Alaska Test Labs, Inc. and SGS Environmental Services (formerly CT&E Environmental Services, Inc.) of Anchorage, Alaska, performed laboratory analytical services. Determination of laboratory sample collection depended on variability of soil properties (i.e., soil type, soil moisture, sample depth, etc.).

Soil samples collected in the field were stored outside in a cooler while at Thule Air Base. Samples were shipped from Thule Air Base to Anchorage, Alaska, in a cooler packed with frozen gel ice. Samples were transported under the United States Department of Agriculture (USDA) soil permit issued to SGS Environmental. Upon arrival in Anchorage, soil samples were immediately delivered to the appropriate laboratory and stored in a freezer. Under direction of the USDA, soil collected between the ground surface and 2.1 meters BGS were required to follow stipulations of the soil permit. Soil samples collected from 0 to 2.1 meters BGS were submitted to SGS Environmental, and soil collected below 2.1 meters BGS were submitted to Alaska Test Labs for laboratory analysis.

Upon completion of drilling, thermistor casings were installed in each soil boring to measure subsurface soil temperatures. Thermistor casings consisted of 20 mm schedule 40 PVC pipe. The boreholes were backfilled with native soil cuttings.

2.0 Climate and Geology

2.1 Climate

Climatically, the area has an arctic continental weather regime with brief mild summers and long, cold, dry winters. Prolonged periods of sub-zero weather are experienced. The mean annual temperature is -12° Celsius; average precipitation is 11.7 cm; and average snowfall is 86 cm. Seasonal temperature variations range from -26° Celsius in March to 5° Celsius in July.

2.2 Regional Geology

Greenland covers nearly 2,175,590 square kilometers; more than 80 percent is covered either by the ice cap or small glaciers. According to scientific measurements, the greatest thickness of the ice cap is more than 4,880 meters (3,230 meters above sea level and another 1,800 meters below sea level). To a depth of about 18 meters, the cap is comprised of compressed snow; the top layers are dry and crusty, creating fine, powdered snow.

The perimeter of Greenland consists mainly of mountains. Glaciers flow through deep mountain valleys to the sea. The highest peaks, the Gunnbjorn Mountains, on the eastern coasts of the island rise over 3,700 meters. Thule Air Base is located in a coastal valley approximately 6 kilometers from the entrance of North Star Bay on Greenland's west coast. The bay is part of Baffin Bay, which extends to the southern part of Ellesmere Island 225 kilometers west of Thule Air Base. The base is built on a broad and rather flat glacial valley floor between two bedrock ridges, North and South Mountains. The land is

comprised of rock, ice, and tundra. The valley slopes gently to the east-southeast until it meets an ice cap, the Great Land Glacier, about 16 kilometers inland.

Thule's climate results in continuous permafrost that extends to depths of over 450 meters. An annual active zone develops to depths of 0.3 to 1.8 meters. Soils are of glacial origin and are composed primarily of silty tills and glacial outwash. Soils range in thickness from 0 meters near the valley edge to over 24 meters near the center of the valley. Vegetation is primarily annual grass in the undisturbed areas.

3.0 Previous Geotechnical Investigations

At the time of the geotechnical investigation in March of 2004, at least three other known geotechnical investigations had been performed at Thule Air Base. The work included investigations at the New Hospital Clinic (2001), the FY05 Dormitory site (1993), and the Cold Storage Building (1984).

3.1 New Hospital Clinic

A geotechnical investigation was conducted in September of 2001, by GEO Danish Geotechnical Institute, at the new hospital clinic site. The investigation included excavation of 6 test pits to depths of up to 1.9 meters BGS. The pits typically consisted of sand and gravel fill overlying peat and glacial till. Gravel and cobbles were encountered in one of the test pits. The depth of thaw ranged from 1.4 to 1.9 meters BGS. Temperatures of the active layer ranged from -1 to 4° Celsius, with the underlying thawed zone ranging from -1 to 0° Celsius. Temperatures were not measured in the permafrost.

Excavation was stopped at the interface between the active zone and the permafrost. Due to the hardness of the permafrost, soil samples were not collected. Ice lenses and segregated ice were observed in the test pits. Groundwater was observed in some of the test pits at the interface between the active layer and the permafrost.

3.2 FY 05 Dormitory Site

In August of 1991, METCALF & EDDY conducted a geotechnical investigation at the FY05 Dormitory Site. Five soil borings were drilled with depths ranging from 1.8 to 3 meters BGS. The subsurface soil consisted of fill material comprised of sands and gravels overlying the permafrost (sand and silt with occasional cobbles).

Soil temperatures were not recorded in any of the soil borings. Permafrost was noted on the soil borings at depths ranging from 1.5 to 2.1 meters BGS. Ice was noted in three of the five soil borings. Water was observed between 0.7 to 0.9 meters BGS in two of the borings.

3.3 Cold Storage Building

Baker conducted a geotechnical investigation at the cold storage building in April of 1984. The investigation included drilling four soil borings ranging in depths from 6.6 to 7.3 meters BGS. Soils encountered in the borings were well-graded silt, sand, gravel mixtures with occasional large cobbles and boulders. An active zone, approximately 1.5 meters thick was observed overlying the permafrost. Ice was observed as coatings on particles, lenses, and massive ice in the permafrost. Soil temperatures were not recorded during the investigation. Groundwater was not observed in the soil borings at the time of drilling.

4.0 Field Investigation

Field operations were conducted with a single crew. The geotechnical investigation was conducted and supervised by Mike Cox, PE, a Baker geotechnical engineer from Anchorage, Alaska. Drilling was performed by Warren George Inc., represented by Tony Martin (driller) and Allen Burgess (helper). The crew drilled, logged, sampled, and installed thermistor casings. Greenland Contractors recorded soil temperatures, under the supervision of Anders Borggaard Jensen and Mark Alex Kristensen. Ambient air temperatures ranged from -29 to -18° Celsius during the drilling investigations, with wind chill ranging from -42 to -28° Celsius. Temperatures ranged from 4 to 6° Celsius at the time thermistor measurements were recorded.

4.1 Sampling Operations

4.1.1 Soil Samples

Undisturbed soil samples were collected in each boring at a minimum of 1.5-meter intervals. To collect the samples, solid stem augers were drilled to the top of the targeted sample interval (i.e., 1.5, 3.0, 4.6 meters BGS, etc.) and the augers were removed from the ground surface. Since permafrost was encountered in each boring at Thule Air Base, the use of solid stem augers was practical since the boring remained open once augers were removed from the ground. A sample spoon was threaded onto the bottom of the drill rod, and the rods and sampler were replaced inside the boring. With the sampler resting on the undisturbed soil at the bottom of the boring, a weighted hammer was used to drive the drill string/sample spoon into the undisturbed soil.

The number of hammer blows (blow counts) required to advance the sample spoon 61 cm were recorded in the field. Depending on the density of the soils and presence of boulders, sample spoon penetration varied between 1.3 and 61 cm. The number of blow counts required to drive the sample spoon in 15.2-cm increments were recorded and are presented on the boring logs in Appendix A. After driving the sample spoon, it was retrieved, disassembled, classified (logged), and collected for laboratory analysis.

4.1.2 Soil Temperatures

Soil temperatures were measured in each soil boring using a 15.2-meter EBA Engineering thermistor string. The thermistor string was shipped to Thule Air Base approximately two weeks after completion of the geotechnical drilling program. Temperatures in the soil borings were recorded between June 22 and 29, 2004, approximately three months after completion of the drilling effort, which allowed the subsurface soil temperatures, to return to equilibrium. Upon removing the PVC cap, the thermistor string was inserted into the bottom of each casing and allowed to stabilize. The resistance was measured at each thermistor node, located every 1.5 meters, in the soil boring. The resistance was then converted into degrees Celsius.

5.0 Laboratory Program

To evaluate the physical properties of the soils, a comprehensive laboratory testing program was performed on representative samples. The objective of the program was to measure soil index properties that could be used for evaluating site conditions and engineering design criteria. Laboratory procedures were in accordance with ASTM. Testing was conducted to measure moisture content (ASTM D2216), particle-size distribution (ASTM D422), frozen unit weight, thaw consolidation, and salinity.

The results of the laboratory-testing program are described in Section 6.0 and presented on the boring logs in Appendix A. The laboratory analysis report is included in Appendix B. A brief description of each analysis is described below.

5.1 Moisture Content (ASTM D2216)

Moisture content was determined by measuring the sample weight loss after drying at 110° Celsius. Moisture content was calculated by dividing the weight of water lost upon drying by the weight of dry soil, and is expressed as a percent.

5.2 Particle-Size Distribution (ASTM D422)

Particle-size analyses were conducted using sieves and hydrometers. This test method covers the quantitative determination of the distribution of particle sizes in soils. The distribution of particle sizes larger than 75 µm was determined by sieving. A sedimentation process, using a hydrometer to secure the necessary data, determines the distribution of particle sizes smaller than 75 µm. The samples tested were representative of the various soil types encountered in the borings.

5.3 Frozen Unit Weight

Soil samples were collected in the field inside brass liners. The samples were retained at temperatures below 0° Celsius from the time of collection until sample analysis. The total weight of the in-situ soil, including the brass liners was measured and recorded. The volume of the liner and the moisture content was determined. The dry density was determined by dividing the dry unit weight by the volume.

5.4 Thaw Consolidation

Soil samples were collected in the field inside brass liners. The samples were retained at temperatures below 0° Celsius from the time of collection until sample analysis. In order to prevent the test specimen from thawing prior to measurement of deformation, the sample apparatus was placed in a freezer with the test specimen until the temperature of the apparatus was the same as the sample specimen. With the sample inside the brass liner, 288 kilopascals (kPa) of static pressure was applied to the top of the sample while the sample was allowed to thaw at room temperature of 23° Celsius. The test apparatus allowed the sample to drain through a porous stone and two drainage tubes. Once complete consolidation occurred, the sample was removed from the testing apparatus. Deformation measurements are taken using a linear voltage deformation transducer. Initial and final moisture contents of the sample were also measured.

5.5 Salinity

Pore water salinity was measured using a Quantab Titrator. After air drying the soil sample, approximately 25 to 50 grams of soil (sand or finer) is placed into water and brought to a boil. The water is then passed through filter paper separating the soil particles. The amount of chloride in the filtered water is then measured. By using initial and final moisture contents of the soil sample, the amount of salinity is calculated for the entire sample.

6.0 Subsurface Conditions

Based on the results of the geotechnical investigation, the subsurface soils at the project site generally consisted of olive gray poorly graded gravel with sand (GP) underlain by olive gray silty sand (SM), ice, cobbles, and boulders. The gravel ranged in thickness from 0.9 to 2.2 meters thick and was representative of fill material. Massive ice was observed in soil borings B-3, B-4, and B-5 at depths of 3.5, 2.7, and 2.8 meters, respectively and was approximately 0.5 meters thick. Individual ice crystals and inclusions were observed in the silty sand. Occasional visible ice, ranging from 11 to 20%, was observed in over half of the soil samples containing silty sand. Soil samples collected in soil borings B-3, B-4, and B-5 contained considerable visible ice (greater than 35%) at depths of 4.3, 3.7, and 3.7 meters, respectively.

Cobbles and boulders were encountered at various depths throughout each soil boring. A layer of cobbles and boulders was encountered consistently in each of the borings at or around 5 to 6 meters BGS. The thickness of the layer ranged from 0.2 to 3.5 meters thick. In comparing the geotechnical soil data and the GPR interpretation done by CRREL, the suspected ice lens at 5 to 6 meters BGS is most likely a layer of cobbles and boulders.

Standard penetration testing indicated very dense material. The maximum penetration of the split spoon sampler was at soil boring B-4, in ice. This particular sample was driven 28 cm and required 180 blow counts. The presence of cobbles, boulders, and very dense material limited the collection of soil samples during the investigation. Two drill bits were completely melted during the drilling operation and numerous drill bit carbide teeth

were destroyed. The soil borings were logged based on the limited collection of undisturbed soil samples and the minimal amount of soil cuttings that were available.

During the investigation, groundwater was observed at 2.7 meters BGS in soil boring B-1. Groundwater was not observed in soil borings B-2 through B-5. Groundwater levels are often highest during the late spring and early summer during the thaw period and lowest during mid-winter, but may fluctuate greatly depending upon surface water conditions. In this case, the groundwater observed in soil boring B-1 is likely surface water perched above the permafrost.

Measured soil temperatures ranged from -10.3 to 1.4° Celsius. The soil temperature ranged from -2.9 to 1.4° Celsius in the top 1.5 meters. From 1.5 to 7.6 meters BGS, temperatures ranged between -10.3 to -5.4° Celsius. Soil temperatures in the active layer are seasonal with maximum thaw probably not occurring until August or September. Thermistor nodes located at the ground surface ranged from 5.0 to 7.3° Celsius

Based on laboratory analysis from submitted samples, moisture content in the soil ranged from 3.0 to 33.8%. Moisture content taken at 3.0 meters BGS in soil boring B-5, ice with silty sand, was 2,048.5%. Due to the limited collection of undisturbed soil samples, only one sample was submitted for frozen unit weight and thaw consolidation. The frozen unit weight and thaw consolidation of the silty sand with ice at 3.7 meters BGS in soil boring B-4 was $1,035 \text{ kg/m}^3$ and 44.6%, respectively. Frost classifications in the silty sand were identified as F4 and PFS-F2 (MOA F2). Due to the close proximity between the proposed dormitory and North Star Bay, soil samples were submitted for pore water salinity analysis. High concentrations of saline in the soil can lower the freeze point temperature. However, analytical results from the soil samples were at or below 6.0 parts per thousand (ppt), thus a significant change in soil temperature correction was not observed.

Drilling locations are identified on the Site Plan (Figure 1). Boring logs and analytical reports are presented in Appendix A and B, respectively. Soil temperatures are presented on the boring logs and summarized in Table 1.

7.0 Conclusions and Recommendations

Based on Baker's geotechnical investigation, there appear to be no geotechnical conditions that would prevent the successful completion of the proposed facility. However, the recommendations in this report should be followed carefully to minimize delays, inconveniences, or losses that might surface from the conditions that do exist.

7.1 Thermal Parameters

Thermal calculations were performed to determine the required depth of non-frost susceptible (NFS) fill and/or insulation to keep the permafrost frozen at the site. Because of the extreme thaw instability of the soil beneath the active zone, the existing thermal regime must be maintained beneath the building.

The design freeze/thaw indexes, for Thule Air Base, were provided by the Air Force Combat Climatology Center (AFCC) through CRREL. The AFCC updated the design and mean freeze/thaw indexes in June of 2004. A mean freeze index of 4,617°C-days and a design thaw index of 612°C-days were used in calculating the estimated freeze and thaw depths at the site. The estimated depth of freeze and thaw is approximately 3.0 meters and 2.3 meters, respectively. Thermal calculations were estimated per CRREL recommendations by means of the modified Berggren equation as outlined in the Department of the Army Technical Manual TM 5-852-6/Air Force Manual 88-19 Chapter 6. Thermal calculations are presented in Appendix C.

7.2 Shallow Foundations

The foundation system, founded on the permafrost, consists of reinforced cast-in-place concrete spread footings with concrete piers supporting individual steel columns. The piers will extend above grade to create a 1 meter high clear ventilation space between the heated dormitory and finish grade, thus avoiding thermal flow from the building into the permafrost. Spread footings, performing as a ballast, will be designed to resist maximum vertical, lateral, and overturning design loads.

Concrete foundations should be placed on a pad of compacted gravel at the interface between the active layer and the permafrost table. Based on calculated thaw depths, the spread footings should be placed approximately 1.7 meters below grade. A compacted NFS fill at least 0.6 meters thick should be placed in the bottom of the excavation separating the concrete pad and permafrost table. A non-woven geofabric membrane should be installed between the NFS fill and permafrost table. The pad and post should be backfilled, and compacted in layers, with NFS foundation fill. The NFS fill pad shall be a minimum of 2.3 meters thick in order to provide thermal protection to the permafrost.

Polystyrene closed cell insulation (50.8 mm thick, 0.6 meter wide, and 2.4 meter long) testing at a minimum compressive strength of 275 kPa should extend outward from the perimeter of the building a minimum of 3 meters. The insulation should also extend a minimum of 3 meters inward from the building perimeter underneath the building footprint. The insulation should be placed at a depth of approximately 0.4 meters BGS to account for the potential of thermal degradation. Placement of the insulation should be in two layers (102 mm thick) with well-butt joints and overlapping seems. Eliminating common seams in the layered insulation will help retard the penetration of surface water. The insulation will limit the depth of thaw during extreme hot summers.

The surface of the pad should be extended at least 3 meters beyond the perimeter of the building and shall slope so that water will not pond under or adjacent to the building. An unskirted airspace between the heated floor of the building and the finished ground surface will tend to prevent degradation of the underlying permafrost. A minimum air space of 1 meter is assumed to be adequate for proper ventilation between the well-insulated building and the finished ground elevation. The airspace insulates the building floor from the ground and acts as a convective passage for flow of cold air to dissipate heat from the building. Normal snow removal around the building should also increase ground cooling during the winter.

To account for a design thaw depth of 2.3 meters, an allowable bearing pressure for thawed soil was estimated. The maximum allowable foundation pressure for standard spread footings placed as described above shall not exceed 167 kPa. The maximum allowable lateral bearing pressure shall not exceed 9 kPa per meter. The coefficient of friction for lateral sliding shall be 0.35 as per Table 1804.2 of the 2000 edition of the International Building Code (IBC).

7.3 Grading and Earthwork

The subsurface soil observed at the site consists of poorly graded sands and gravels overlying silty sand, ice, and cobbles. Standard excavation equipment will be adequate for site grading and excavation of the footings. Side slopes should be in accordance with the local safety standards with consideration of the potential caving conditions presented by the relatively clean, poorly graded sand and gravel expected at the site.

The subgrade below the spread footing should be undercut, backfilled, and compacted with NFS material. Such material shall be obtained from a local quarry. A filter fabric material should be placed along the bottom and sides of the undercut area to separate the fines from migrating into the NFS backfill.

Fill placed for site grading and drainage, up to the bottom of the insulation, should be compacted to 95% of the maximum density obtained by this standard. Care should be exercised in the placement and compaction of NFS fill over the insulation to avoid displacement and damage to the insulation. All fill should be placed in above freezing air temperatures and should be carefully controlled to prevent the incorporation of frozen soil into the fill as this may cause detrimental settlements. Fill that has frozen should be removed or allowed to thaw and be recompacted before placement of additional fill or foundation elements.

The project should be scheduled to minimize exposure of the permafrost at the bottom of the excavation to warm air or solar radiation. Construction of the NFS fill and foundation pads should be scheduled for late summer/early fall at the time of maximum thaw in the active layer to facilitate excavation. If the construction schedule allows enough time, the NFS fill and foundation pad should be backfilled to a depth of approximately 0.4 meters and allowed to sit through the winter. Prior to erection of the building the following summer, placement of the layered insulation and 0.4 meters of overlying NFS fill should be placed in the spring.

7.4 Site Preparation

All subgrade materials beneath the footings should be compacted to 95% of the modified proctor maximum dry density (ASTM D1577). Structural fill placed beneath and around the footings should be placed in loose lifts not to exceed 15 cm in thickness. Each lift should then be compacted to 95% of the modified proctor maximum dry density. It is recommended that an engineer from Greenland Contractors be present during placement of all NFS fill to ensure quality control of the backfill efforts. The suitability of backfill

as structural fill depends greatly upon soil gradation and moisture content of the material at the time of placement.

It is recommended that only NFS sands and gravels with less than 5% by weight passing the No. 200 sieve be used as structural fill. The percent minus No. 200 material shall be determined from an analysis of minus three-inch material. Additionally, a maximum particle size of 7.6 cm for materials placed within 15 cm of the footings is recommended.

7.5 Groundwater Control

Groundwater was observed in boring B-1, at approximately 2.7 meters BGS. Previous geotechnical investigations conducted at Thule indicate the presence of groundwater at the interface of the active zone and the permafrost table. Any flow of groundwater, including melt water from soil above the permafrost, shall be handled with a provisional drain at the toe of the excavation leading to a sump and pumped out of the excavation. Melt water shall be drained away from the dormitory construction.

7.6 Seismic Considerations

Based on the design criteria, the proposed site is categorized as seismic use group I with a seismic design category B. A site class D is recommended as per table 1615.1.1 of the 2000 edition of the IBC.

8.0 Limitations



The findings of this report are believed to reasonably and accurately describe site conditions to the extent practical given the scope of our investigation. However, this investigation, like all such investigations, can directly explore subsurface conditions in only a few isolated locations within the site. Soil and geologic conditions, which vary from the conditions described in this report, should be brought to the attention of Baker for further evaluation.

Our design recommendations were developed based on the findings of our investigation. The recommendations were developed specifically for this project and do not necessarily apply to any other site or project. If the nature of the project changes significantly from that described in this report, please contact Baker so that we may confirm the validity of our design recommendations.

9.0 References

American Society of Testing and Materials (ASTM)

- ASTM D2216. Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D2487. Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- ASTM D422. Standard Test Method for Particle-Size Analysis of Soils

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Table 1 Ground Temperature Results
Thule Air Base, Greenland
Measurements Recorded Between June 22 and 29, 2004

B-1	
Depth (meters-bgs)	Ground Temperature (°C)
0.0	5.3
1.5	-2.9
3.0	-7.5
4.6	-9.5

B-4	
Depth (meters-bgs)	Ground Temperature (°C)
0.6	1.4
2.1	-5.4
3.7	-9.1
5.2	-10.2

B-2	
Depth (meters-bgs)	Ground Temperature (°C)
0.0	7.3
1.5	-1.2
3.0	-6.7
4.6	-9.4
6.1	-10.2
7.6	-10.2

B-5	
Depth (meters-bgs)	Ground Temperature (°C)
0.0	5.9
1.5	-2.5
3.0	-7.2
4.6	-9.4
6.1	-10.0
7.6	-10.0

B-3	
Depth (meters-bgs)	Ground Temperature (°C)
0.0	5.0
1.5	-2.0
3.0	-6.8
4.6	-9.5
6.1	-10.2
7.6	-10.3

Ambient Air Temperature Ranged From 4 to 6°



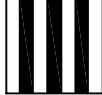


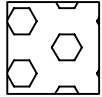








Engineering & Energy

Michael Baker Jr., Inc.

Appendix A Boring Logs

EXPLANATION OF BOREHOLE LOGS

	ORGANIC MATERIAL (PT)		SILT (ML)		ICE - SILT
	WELL GRADED GRAVEL (GW)		CLAY		COBBLES & BOULDERS
	POORLY GRADED GRAVEL (GP)		SILTY SAND (SM)		
	WELL GRADED SAND (SW)		SILTY GRAVELS (GM)		
	POORLY GRADED SAND (SP)		ICE, MASSIVE		

OD – Outside Diameter
 SSA – Solid Stem Auger
 HSA – Hollow Stem Auger
 SSS – Split Spoon Sampler
 PPT – Parts per Thousand

Percentage of Visible Ice

0%	No Visible Ice
1%–10%	Little Visible Ice
11%–20%	Occasional Visible Ice
21%–35%	Some Visible Ice
>35%	Considerable Visible Ice

ICE DESCRIPTIONS

GROUP SYMBOL	ICE VISABILITY AND CONTENT	SUBGROUP			
		DESCRIPTION		SYMBOL	
N	Ice not visible	poorly bonded or friable		N _f	
		Well-bonded	No excess ice	N _b	N _{bn}
			excess ice		N _{be}
V	Ice visible, <50%	Individual ice crystals or inclusions		V _x	
		Ice coatings on particles		V _c	
		Random or irregularly oriented ice formations		V _r	
		Stratified or distinctly oriented ice formations		V _s	
ICE	Ice visible, >50%	Ice with soil inclusions		ICE + soil type	
	Individual layer >6" thick	Ice without soil inclusions		ICE	

DATE DRN: JUNE 04
 DRAWN BY: MDC

Baker

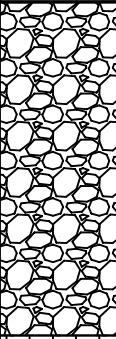
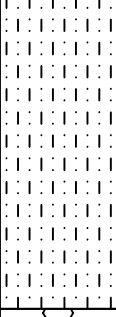
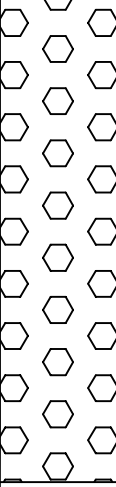

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SHEET

1 of 1

LOG OF EXPLORATORY BOREHOLE BOREHOLE B-1,BUILDING 103 (FY05 DORMITORY)

PROJECT NAME: THULE FY 05 DORMITORY REPLACEMENT	START TIME: 1:30 PM 3/23/04
LOCATION: THULE AIR BASE, GREENLAND	END TIME: 6:15 PM 3/24/04
LOGGED BY: MIKE COX, PE	DRILLING CONTRACTOR: WARREN GEORGE INC. JERSEY CITY, NEW JERSEY
PROJECT NUMBER: 102396	DRILL RIG TYPE: ACKER SOIL XLT TRAILER MOUNTED SKID, 10.2-CM O.D. SSA
TOTAL BOREHOLE DEPTH: 7.6 METERS	SAMPLING METHOD: STANDARD PENETRATION SPLIT SPOON SAMPLER

GRAPHIC LOG	DRIVEN/RECOVERED	BLOW COUNT PER 15.2-CM	MOISTURE CONTENT	SOIL TEMP (CELSIUS)	DEPTH (METERS)	SAMPLES	DESCRIPTION
				5.3	0		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND AND COBBLES (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
					0.6		
					1.2		
	2.5 CM	120	3%	-2.9	1.8		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND OCCASIONAL COBBLE
					2.4		OLIVE GRAY SILTY SAND WITH GRAVEL (SM)
					3.0		WATER ENCOUNTERED IN SOIL DURING DRILLING
	8.9 CM	120	28.6%	-7.5	3.7		OLIVE GRAY SILTY SAND WITH GRAVEL AND ICE (SM) FROZEN - OCCASIONAL VISIBLE ICE, 11-20% (Vx + Vc + Vr) SALINITY 0.8 PPT
					4.3		
	7.6 CM	100		-9.5	4.9		COBBLES/BOULDERS
					5.5		BOULDER AT 5.2 METERS
	2.5 CM	100			6.1		COBBLES/BOULDERS
					6.7		
					7.3		
	1.3 CM	100			7.9		COBBLES/BOULDERS
					8.5		
					9.1		
					9.8		

DATE DRN: 4/21/04
DRAWN BY: MDC

COMMENTS: 140 POUND HAMMER USED FOR BLOW COUNTS.
INSTALLED 20 MM SCH 40 PVC THERMISTOR CASING.
BORING LOGS ARE SHOWN IN METRIC UNITS.

Baker

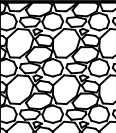
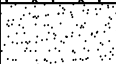
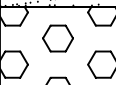
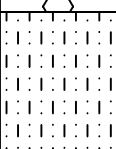
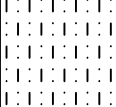
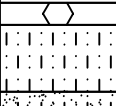

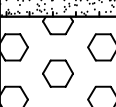
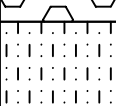
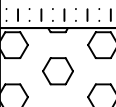
Michael Baker Jr., Inc.
4601 BUSINESS PARK BLVD.
ANCHORAGE, AK 99503
(907) 273-1600

SHEET

1 of 5

LOG OF EXPLORATORY BOREHOLE BOREHOLE B-2, BUILDING 103 (FY05 DORMITORY)

PROJECT NAME: THULE FY 05 DORMITORY REPLACEMENT	START TIME: 7:20 AM 3/28/04
LOCATION: THULE AIR BASE, GREENLAND	END TIME: 12:10 PM 3/28/04
LOGGED BY: MIKE COX, PE	DRILLING CONTRACTOR: WARREN GEORGE INC. JERSEY CITY, NEW JERSEY
PROJECT NUMBER: 102396	DRILL RIG TYPE: ACKER SOIL XLT TRAILER MOUNTED SKID, 10.2-CM O.D. SSA
TOTAL BOREHOLE DEPTH: 7.6 METERS	SAMPLING METHOD: STANDARD PENETRATION SPLIT SPOON SAMPLER

GRAPHIC LOG	DRIVEN/RECOVERED	BLOW COUNT PER 15.2-CM	MOISTURE CONTENT	SOIL TEMP (CELSIUS)	DEPTH (METERS)	SAMPLES	DESCRIPTION
				7.3	0		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
					0.6		
					1.2		OLIVE GRAY POORLY GRADED SAND WITH GRAVEL (SP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
							COBBLES/BOULDERS
				-1.2	1.8		
							OLIVE GRAY SILTY SAND (SM) OCCASIONAL COBBLE
					2.4		OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - OCCASIONAL VISIBLE ICE, 11-20% (V _x + V _c + V _r)
	10.2 CM	130	28.4%	-6.7	3.0		OLIVE GRAY SILTY SAND WITH GRAVEL AND ICE (SM) FROZEN - OCCASIONAL VISIBLE ICE, 11-20% (V _x + V _c + V _r)
					3.7		OLIVE GRAY SILTY SAND WITH ICE (SM) COBBLES/BOULDERS
							OLIVE GRAY SILTY SAND WITH GRAVEL (SM), OCCASIONAL COBBLE
					4.3		OLIVE GRAY POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM) OCCASIONAL COBBLE
	1.3 CM	130	22.4%	-9.4	4.9		
					5.5		COBBLES/BOULDERS
	2.5 CM	200	11.5%	-10.2	6.1		OLIVE GRAY SILTY SAND WITH GRAVEL (SM) FROST CLASSIFICATION: PFS-F2 (MOA F2) SALINITY 0.5 PPT
					6.7		COBBLES/BOULDERS
	2.5 CM	200		-10.2	7.3		
					7.9		
					8.5		
					9.1		
					9.8		

DATE DRN: 4/21/04
DRAWN BY: MDC

COMMENTS: 140 POUND HAMMER USED FOR BLOW COUNTS.
INSTALLED 20 MM SCH 40 PVC THERMISTOR CASING.
BORING LOGS ARE SHOWN IN METRIC UNITS.

Baker

Michael Baker Jr., Inc.
4601 BUSINESS PARK BLVD.
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SHEET

2 of 5

LOG OF EXPLORATORY BOREHOLE

BOREHOLE B-3, BUILDING 103 (FY05 DORMITORY)

PROJECT NAME: THULE FY 05 DORMITORY REPLACEMENT

START TIME: 7:30 AM 3/27/04

LOCATION: THULE AIR BASE, GREENLAND

END TIME: 6:00 PM 3/27/04

LOGGED BY: MIKE COX, PE

DRILLING CONTRACTOR: WARREN GEORGE INC. JERSEY CITY, NEW JERSEY

PROJECT NUMBER: 102396

DRILL RIG TYPE: ACKER SOIL XLT TRAILER MOUNTED SKID, 10.2-CM O.D. SSA

TOTAL BOREHOLE DEPTH: 7.8 METERS

SAMPLING METHOD: STANDARD PENETRATION SPLIT SPOON SAMPLER

GRAPHIC LOG	DRIVEN/RECOVERED	BLOW COUNT PER 15.2-CM	MOISTURE CONTENT	SOIL TEMP (CELSIUS)	DEPTH (METERS)	SAMPLES	DESCRIPTION
				5.0	0		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
					0.6		COBBLES/BOULDERS
	1.3 CM	100	3.6%				OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND SALINITY 0.1 PPT
					1.2		
	10.2 CM	130	5.6%	-2.0			OLIVE GRAY POORLY GRADED SAND WITH GRAVEL (SP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND SALINITY 0.1 PPT
					1.8		COBBLES/BOULDERS
					2.4		
	5.1 CM	100		-6.8	3.0		OLIVE GRAY SILTY SAND WITH GRAVEL (SM)
					3.7		ICE
	15.2 CM 1.3 CM	115 100					COBBLES/BOULDERS
					4.3		OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - CONSIDERABLE VISIBLE ICE, >35% (Vr + Vs)
	8.9 CM	200		-9.5			
					4.9		COBBLES/BOULDERS
					5.5		ICE
							COBBLES/BOULDERS
							ICE
							COBBLES/BOULDERS
	3.8 CM	100		-10.2	6.1		OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - OCCASIONAL VISIBLE ICE, 11-20% (Vx + Vc + Vr)
					6.7		COBBLES/BOULDERS
					7.3		OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - OCCASIONAL VISIBLE ICE, 11-20% (Vx + Vc + Vr)
	1.3 CM	100		-10.3			COBBLES/BOULDERS
					7.9		
					8.5		
					9.1		
					9.8		

DATE DRN: 4/21/04
DRAWN BY: MDC

COMMENTS: 140 POUND HAMMER USED FOR BLOW COUNTS.
INSTALLED 20 MM SCH 40 PVC THERMISTOR CASING.
BORING LOGS ARE SHOWN IN METRIC UNITS.

Baker

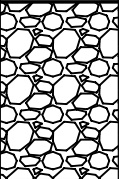
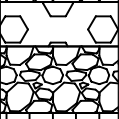
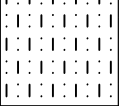
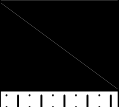
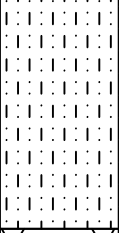
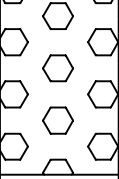
Michael Baker Jr., Inc.
4601 BUSINESS PARK BLVD.
ANCHORAGE, AK 99503
(907) 273-1600

SHEET

3 of 5

LOG OF EXPLORATORY BOREHOLE BOREHOLE B-4, BUILDING 103 (FY05 DORMITORY)

PROJECT NAME: THULE FY 05 DORMITORY REPLACEMENT	START TIME: 8:00 AM 3/26/04
LOCATION: THULE AIR BASE, GREENLAND	END TIME: 6:40 PM 3/26/04
LOGGED BY: MIKE COX, PE	DRILLING CONTRACTOR: WARREN GEORGE INC. JERSEY CITY, NEW JERSEY
PROJECT NUMBER: 102396	DRILL RIG TYPE: ACKER SOIL XLT TRAILER MOUNTED SKID, 10.2-CM O.D. SSA
TOTAL BOREHOLE DEPTH: 6.1 METERS	SAMPLING METHOD: STANDARD PENETRATION SPLIT SPOON SAMPLER

GRAPHIC LOG	DRIVEN/RECOVERED	BLOW COUNT PER 15.2-CM	MOISTURE CONTENT	SOIL TEMP (CELSIUS)	DEPTH (METERS)	SAMPLES	DESCRIPTION
					0		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
				1.4	0.6		
					1.2		COBBLES/BOULDERS
	15.2 CM 10.2 CM	39 100	8.9%		1.8		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
				-5.4	2.4		OLIVE GRAY SILTY SAND (SM) OLIVE GRAY SILTY SAND (SM) FROZEN - ICE NOT VISIBLE (Nb)
							ICE
	15.2 CM 12.7 CM	60 120			3.0		
	15.2 CM 1.3 CM	130 100	30.9%	-9.1	3.7		OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - CONSIDERABLE VISIBLE ICE, >35% (Vr + Vs) THAW STRAIN OF 44.6% FROZEN UNIT WEIGHT 1,035 KILOGRAMS PER CUBIC METER
					4.3		
	10.2 CM	200	33.8%		4.9		OLIVE GRAY SILTY SAND (SM) FROST CLASSIFICATION: F4 SALINITY 1.3 PPT
				-10.2	5.5		COBBLES/BOULDERS
	2.5 CM	100			6.1		COBBLES/BOULDERS
					6.7		
					7.3		
					7.9		
					8.5		
					9.1		
					9.8		

DATE DRN: 4/21/04
DRAWN BY: MDC

COMMENTS: 140 POUND HAMMER USED FOR BLOW COUNTS.
INSTALLED 20 MM SCH 40 PVC THERMISTOR CASING.
BORING LOGS ARE SHOWN IN METRIC UNITS.

Baker

Michael Baker Jr., Inc.
4601 BUSINESS PARK BLVD.
ANCHORAGE, AK 99503
(907) 273-1600

SHEET

4 of 5

LOG OF EXPLORATORY BOREHOLE BOREHOLE B-5, BUILDING 103 (FY05 DORMITORY)

PROJECT NAME: THULE FY 05 DORMITORY REPLACEMENT

START TIME: 8:00 AM 3/25/04

LOCATION: THULE AIR BASE, GREENLAND

END TIME: 5:20 PM 3/25/04

LOGGED BY: MIKE COX, PE

DRILLING CONTRACTOR: WARREN GEORGE INC. JERSEY CITY, NEW JERSEY

PROJECT NUMBER: 102396

DRILL RIG TYPE: ACKER SOIL XLT TRAILER MOUNTED SKID, 10.2-CM O.D. SSA

TOTAL BOREHOLE DEPTH: 7.6 METERS

SAMPLING METHOD: STANDARD PENETRATION SPLIT SPOON SAMPLER

GRAPHIC LOG	DRIVEN/RECOVERED	BLOW COUNT PER 15.2-CM	MOISTURE CONTENT	SOIL TEMP (CELSIUS)	DEPTH (METERS)	SAMPLES	DESCRIPTION
				5.9	0		OLIVE GRAY POORLY GRADED GRAVEL WITH SAND (GP) GRAVEL 2.5 TO 5 CM DIAMETER ROUND TO SUBROUND
					0.6		
					1.2		
	6.4 CM	100	12.3%	-2.5			OLIVE GRAY SILTY SAND WITH GRAVEL (SM) SALINITY 0.2 PPT
					1.8		
					2.4		OLIVE GRAY SILTY SAND (SM) FROZEN - ICE NOT VISIBLE (Nb)
	15.2 CM 12.7 CM	97 100	2048.5%	-7.2	3.0		ICE WITH SILTY SAND (ICE + SM)
							COBBLES/BOULDERS
					3.7		OLIVE GRAY SILTY SAND WITH GRAVEL (SM) OLIVE GRAY SILTY SAND WITH ICE (SM) FROZEN - CONSIDERABLE VISIBLE ICE, >35% (Vr + Vs)
					4.3		
	6.4 CM	100		-9.4			OLIVE GRAY SILTY SAND WITH COBBLES (SM)
					4.9		
					5.5		
							COBBLES/BOULDERS
	1.3 CM	100		-10.0	6.1		OLIVE GRAY SILTY SAND WITH COBBLES (SM)
					6.7		COBBLES/BOULDERS
							OLIVE GRAY SILTY SAND (SM)
					7.3		
	2.5 CM	100	11.7%	-10.0			SALINITY 6.0 PPT
					7.9		
					8.5		
					9.1		
					9.8		

DATE DRN: 4/21/04
DRAWN BY: MDC

COMMENTS: 140 POUND HAMMER USED FOR BLOW COUNTS.
INSTALLED 20 MM SCH 40 PVC THERMISTOR CASING.
BORING LOGS ARE SHOWN IN METRIC UNITS.

Baker

Michael Baker Jr., Inc.
4601 BUSINESS PARK BLVD.
ANCHORAGE, AK 99503
(907) 273-1600

SHEET

5 of 5



Engineering & Energy

Michael Baker Jr., Inc.

Appendix B Analytical Reports



April 27, 2004
W.O. A30647

Michael Cox
Michael Baker, Jr., Inc.
4601 Business Park Blvd., Suite 42
Anchorage, Alaska 99503

Project: Thule FY-05 Dormitory Geotech

Dear Mr. Cox:

Alaska Testlab has completed the testing you requested. The results of the Moisture Content and Salinity Tests are listed below. Sieve Analysis results are published on our website in the Sieve Analysis section. Frozen Unit Weight and Thaw Consolidation test results are on a separate report and can be viewed on the website in the General Report Section.

Client Sample No.	Building No.	ATL Lab No.	Sample Date	ASTM D 2216 Moisture Content	Total Salinity Quantab Titrators (ppt)
Boring 1, 10'-12'	103	605	04/15/2004	28.6%	0.8
Boring 2, 10'-12'	103	606	04/15/2004	28.4%	
Boring 2, 15'-17'	103	607	04/15/2004	22.4%	
Boring 2, 20.5'-23'	103	608	04/15/2004	11.5%	0.5
Boring 4, 15'-17'	103	610	04/15/2004	33.8%	1.3
Boring 5, 10'-12'	103	611	04/15/2004	2048.5%	
Boring 5, 25'-27'	103	612	04/15/2004	11.7%	6.0
Boring 1, 11'-13'	580	613	04/15/2004	12.2%	1.5
Boring 1, 15'-17'	580	614	04/15/2004	29.6%	
Boring 1, 20'-22'	580	615	04/15/2004	61.6%	0.6
Boring 2, 17.5'	580	618	04/15/2004	11.3%	1.7
Boring 2, 25'-27'	580	619	04/15/2004	20.9%	6.2

If you have any questions, please call me.

Sincerely,
ALASKA TESTLAB

Robert L. Anderson, E.I.T.
Assistant Manager

A30647.MCSalinity.605.619.041504.RLA.042704.cch



April 27, 2004
W.O. A30647

Mr. Michael Cox
Michael Baker, Jr., Inc.
4601 Buisness Park Boulevard, Suite 42
Anchorage, Alaska 99503

Subject: Thule FY-05 Dormitory Geotechnical Investigation
Geotechnical Test Results

Dear Mr. Cox

Alaska Testlab (ATL) has completed the testing on the six undisturbed frozen brass liner samples and the 20 bag samples that were received April 15, 2004.

We performed two frozen unit weights according to ASTM D 2937 "Density of Soil In-Place by the Drive-Cylinder Method," two Thaw Consolidation tests according to an ATL procedure. We also performed five sieve analysis and two hydrometer analysis according to ASTM D 422 "Particle-Size Analysis of Soils," 12 moisture contents according to ASTM D 2216 "Laboratory Determination of Moisture Content of Soils, and eight Salinity tests by use of Quantab Titrators. The results for the testing has been posted to our website.

THAW STRAIN

The frozen test specimens were tested in an "undisturbed condition" in order to determine the thaw strain. The frozen test specimens had a height of approximately six inches and a diameter of 1.4 inches. The test specimen was left in its sampling container through the duration of the test with a static pressure of 6,000 psf applied at the top of the sample. Deformation measurements were taken using a Linear Voltage Deformation Transducer (LVDT). The test specimen was allowed to thaw at a temperature of 23 degrees Celsius. The test apparatus allowed the sample to drain through a porous stone and two drainage tubes. In order to prevent the test specimen from thawing prior to measurement of deformation the apparatus was placed in a freezer with the test specimen until the temperature of the apparatus was the same as the test specimen. Figure 1 is an example of a test specimen and the consolidometer apparatus used. Once complete consolidation had occurred the test specimen was removed from the testing apparatus and the final moisture content of the sample was measured. The results are presented in the table below.

Sample I.D.	Depth	Initial Moisture	Frozen Dry Density	Final Moisture	Thaw Strain
Bldg 103 B-04	11.5'-12.0'	30.9 %	64.6 lb/ft ³	15.1%	44.6%
Bldg 580 B-01	25.0'-27.0'	22.4%	97.5 lb/ft ³	21.3%	3.5%

Mr. Michael Cox
Michael Baker, Jr., Inc.
April 27, 2004
Page 2

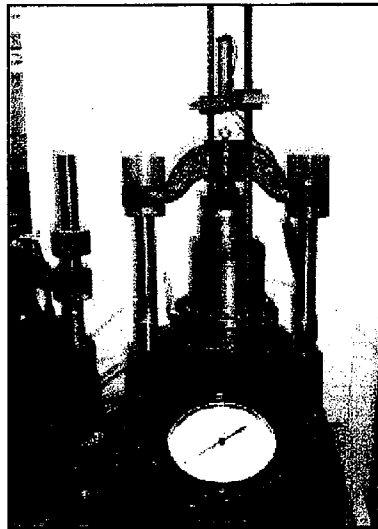


Figure 1: Thaw Strain Test Apparatus

REPORTING

We have a reporting system unlike any in Alaska. By accessing our webpage, your personnel can view the test reports in a timely fashion. All soils, asphalt, and concrete reports are posted each day to the webpage.

If you have any questions regarding the test methods or the results, please call.

Sincerely,
Alaska Testlab

Chris Christensen, E.I.T.
Lab Supervisor

Reviewed by:

David L. Andersen, P.E.,
General Manager

ALASKA TEST LAB A Division of DOW LLC

Client: Michael Baker Jr., Inc.

Project: Thule FY-05 Dormitory Geotech

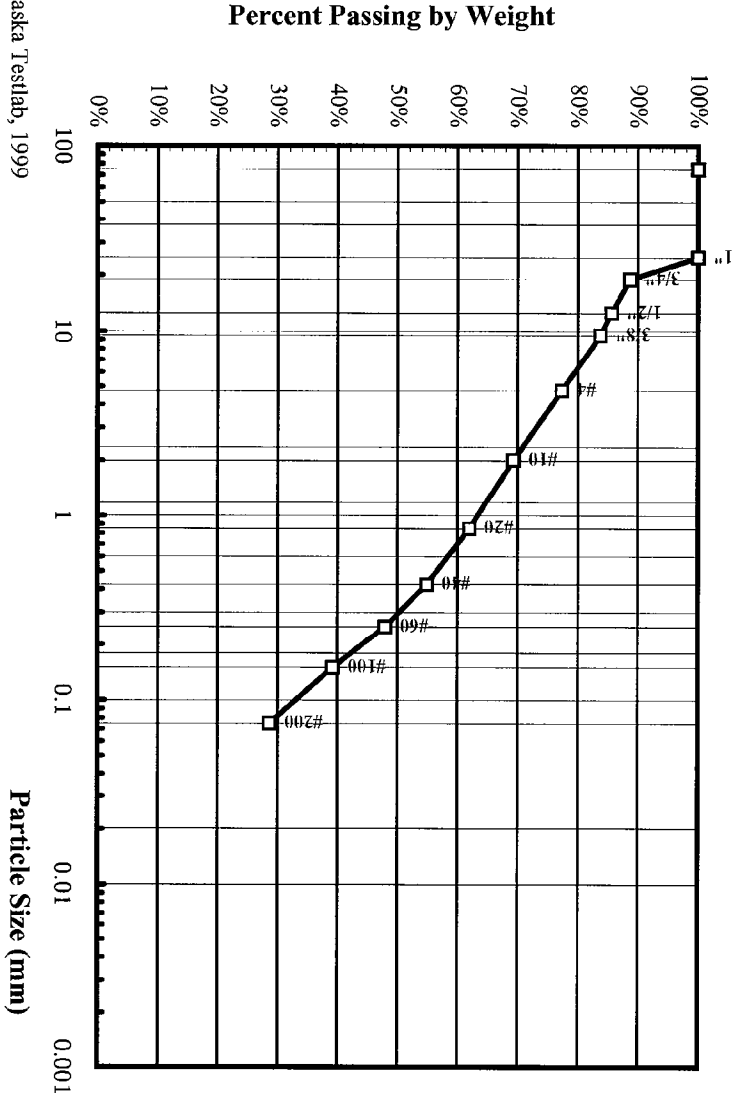
Location: Building 103, Boring 2, 10'-12'

Sample Submitted by Client

Moisture Content = 28.4%

Engineering Classification: Silty SAND with Gravel, SM

Frost Classification: Not Measured



SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	
1 1/2"	
1"	100%
3/4"	89%
1/2"	86%
3/8"	84%
No. 4	77%
Total Wt. = 326g	
No. 8	
No. 10	69%
No. 16	
No. 20	62%
No. 30	
No. 40	55%
No. 50	
No. 60	48%
No. 80	
No. 100	39%
No. 200	29%
Total Wt. of Fine Fraction = 252.4g	
0.075 mm	

PARTICLE-SIZE DIST. ASTM D422

W.O. A30647

Lab No. 606

Received: 4/15/04

Reported: 4/27/04

David L Andersen

David L. Andersen, P.E., General Manager

4040 B Street Anchorage Alaska 99503 • 907/562-2000 • 907/563-3953

ALASKA TEST LAB A Division of DOWLL LLC

Client: Michael Baker Jr., Inc.

Project: Thule FY-05 Dormitory Geotech

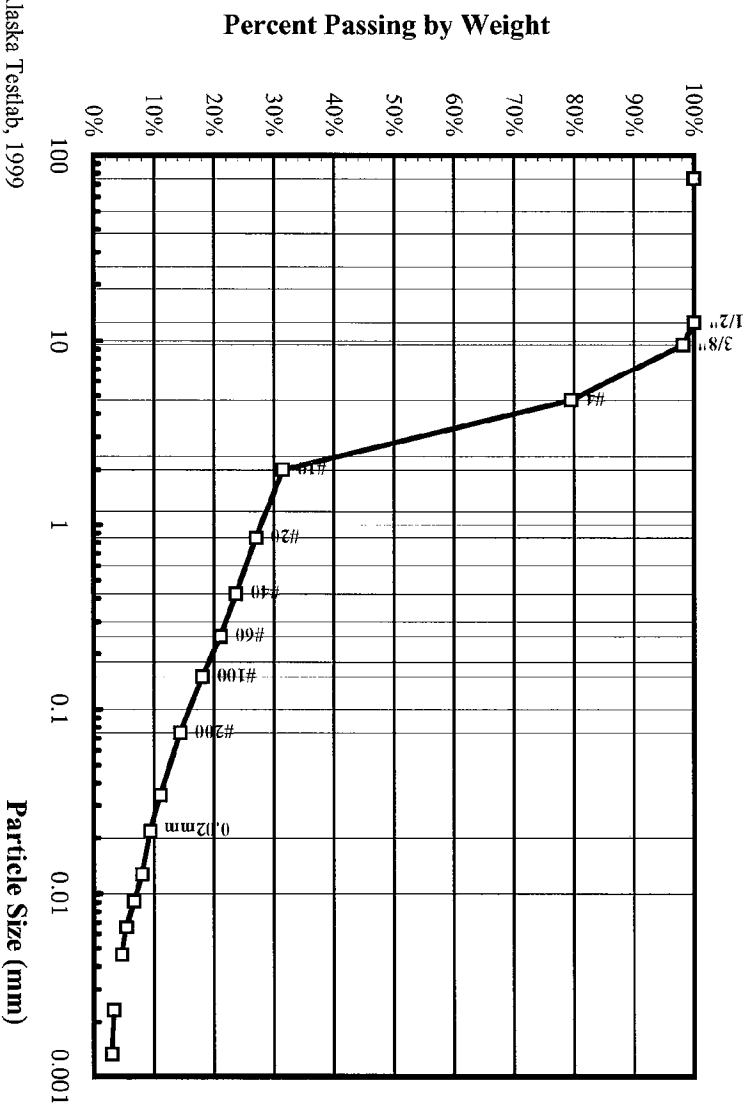
Location: Building 103, Boring 2, 20.5'-23'

Sample Submitted by Client

Moisture Content = 11.5%

Engineering Classification: Silty SAND with Gravel, SM

Frost Classification: PFS-F2 (MOA F2)



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = -0%		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"	100%	
3/8"	98%	
No. 4	79%	
Total Wt. = 182.8g		
No. 8		
No. 10	31%	
No. 16		
No. 20	27%	
No. 30		
No. 40	24%	
No. 50		
No. 60	21%	
No. 80		
No. 100	18%	
No. 200	14%	
Total Wt. of Fine Fraction = 0g		
0.075 mm	9.2%	

PARTICLE-SIZE DIST. ASTM D422

W.O. A30647

Lab No. 608

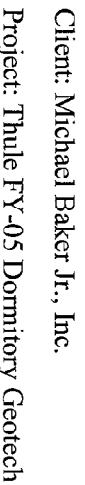
Received: 4/15/04

Reported: 4/27/04

David L Andersen

David L. Andersen, P.E., General Manager

4040 B Street Anchorage Alaska 99503 • 907/562-2000 • 907/563-3953



Client: Michael Baker Jr., Inc.

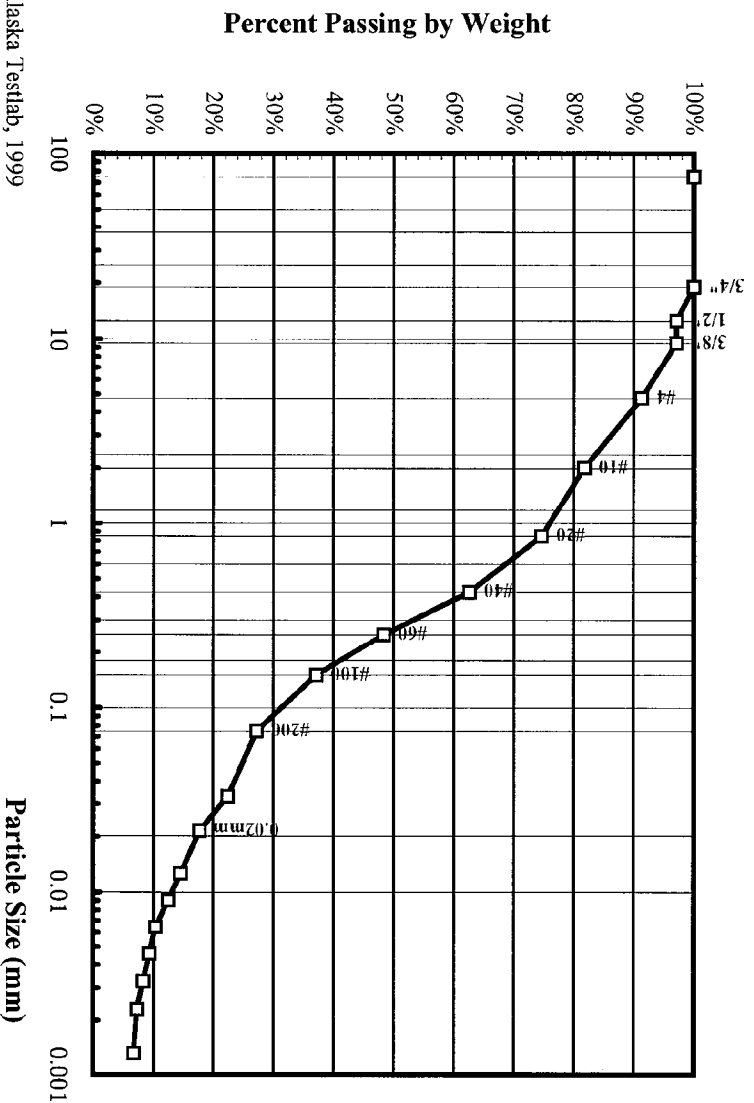
Project: Thule FY-05 Dormitory Geotech

Sample Submitted by Client

Moisture Content = 33.8%

Engineering Classification: Silty SAND , SM

Frost Classification: F4



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = -0%		
3"		
2"		
1 1/2"		
1"		
3/4"	100%	
1/2"	97%	
3/8"	97%	
No. 4	91%	
Total Wt. = 96.9g		
No. 8		
No. 10	82%	
No. 16		
No. 20	75%	
No. 30		
No. 40	63%	
No. 50		
No. 60	48%	
No. 80		
No. 100	37%	
No. 200	27%	
Total Wt. of Fine Fraction = 0g		
0.02 mm	17.3%	

David L Andersen

David L. Andersen, P.E., General Manager

4040 B Street Anchorage Alaska 99503 • 907/562-2000 • 907/563-3953



Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.sgsenvironmental.com>

Jon Wolf
Michael Baker Jr., Inc.
4601 Business Park Blvd #42
Anchorage, AK 99503

Work Order:	1041712 Greenland Geotech
Client:	Michael Baker Jr., Inc.
Report Date:	June 17, 2004

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Control Manual that outlines this program is available at your request. The laboratory ADEC certification numbers are AK08-03 (DW), UST-005 (CS) and AK00971 (Micro).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS Quality Assurance Program Plan and the National Environmental Laboratory Accreditation Conference.

If you have any questions regarding this report or if we can be of any other assistance, please call your SGS Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates an estimated value that falls below PQL, but is greater than the MDL.
J	The quantitation is an estimation.
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
GT	Greater Than
D	The analyte concentration is the result of a dilution.
LT	Less Than
!	Surrogate out of control limits.
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
JL	The analyte was positively identified, but the quantitation is a low estimation.
E	The analyte result is high outside of calibrated range.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.



Laboratory Analysis Report

SGS Ref.# 1041712001
Client Name Michael Baker Jr., Inc.
Project Name/# Greenland Geotech
Client Sample ID B-1 5-7'
Matrix Soil/Solid

All Dates/Times are Alaska Standard Time
Printed Date/Time 06/17/2004 14:38
Collected Date/Time
Received Date/Time 04/12/2004 10:50
Technical Director Stephen C. Ede

Released By *Shane Foster*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	97.0		%	SM20 2540G	A			04/26/04	JC



Laboratory Analysis Report

SGS Ref.# 1041712002
Client Name Michael Baker Jr., Inc.
Project Name/# Greenland Geotech
Client Sample ID B-3 2.5-3'
Matrix Soil/Solid

All Dates/Times are Alaska Standard Time
Printed Date/Time 06/17/2004 14:38
Collected Date/Time
Received Date/Time 04/12/2004 10:50
Technical Director Stephen C. Ede

Released By *Sharon Poston*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Salinity from Chloride	0.0589		ppT	EPA 300.0	A		05/10/04	05/10/04	JMP
Solids									
Total Solids	96.4		%	SM20 2540G	A			04/26/04	JC



Laboratory Analysis Report

SGS Ref.# 1041712003
Client Name Michael Baker Jr., Inc.
Project Name/# Greenland Geotech
Client Sample ID B-3 5-5.5'
Matrix Soil/Solid

All Dates/Times are Alaska Standard Time
Printed Date/Time 06/17/2004 14:38
Collected Date/Time
Received Date/Time 04/12/2004 10:50
Technical Director Stephen C. Ede

Released By *Shane Poston*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Salinity from Chloride	0.0645		ppT	EPA 300.0	A		05/10/04	05/10/04	JMP
Solids									
Total Solids	94.4		%	SM20 2540G	A			04/26/04	JC



Laboratory Analysis Report

SGS Ref.# 1041712004
Client Name Michael Baker Jr., Inc.
Project Name/# Greenland Geotech
Client Sample ID B-4 5-7"
Matrix Soil/Solid

All Dates/Times are Alaska Standard Time
Printed Date/Time 06/17/2004 14:38
Collected Date/Time
Received Date/Time 04/12/2004 10:50
Technical Director Stephen C. Ede

Released By *Shane Potter*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	91.1		%	SM20 2540G	A			04/26/04	JC



Laboratory Analysis Report

SGS Ref.# 1041712005
Client Name Michael Baker Jr., Inc.
Project Name/# Greenland Geotech
Client Sample ID B-5 5-7'
Matrix Soil/Solid

All Dates/Times are Alaska Standard Time

Printed Date/Time 06/17/2004 14:38
Collected Date/Time
Received Date/Time 04/12/2004 10:50
Technical Director Stephen C. Ede

Released By *Shane Patten*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Waters Department									
Salinity from Chloride	0.252		ppT	EPA 300.0	A		05/10/04	05/10/04	JMP
Solids									
Total Solids	87.7		%	SM20 2540G	A			04/26/04	JC



Engineering & Energy

Michael Baker Jr., Inc.

Appendix C Freeze and Thaw Calculations

S.O. No. 102396Subject: Thule FY-05 Dormitory

Thaw Depth Calcs

Sheet No. 1 of 3

Drawing No. _____

Computed by MDCChecked By PSJDate 7/13/04**Baker**

MODIFIED BERGGREN Equation

REFERENCE: CONSTRUCTION IN COLD REGIONS

By TERRY McFADDEN AND F. LAWRENCE BENNETT

$$X_T = \lambda \left| \frac{(2)(24) K_T \pi \Theta_T}{m.c. (\gamma_D) L} \right|^{1/2}$$

 λ = Thermal coefficient K_T = Thermal conductivity of soil (Btu/hr ft²°F) π = ratio of surface thawing index to air thawing index Θ_T = Air Thawing Index (°F-Days)

m.c. = moisture content

 γ_D = Dry density of soil (lbm/ft³) L = Latent heat of fusion of the water

$$K_T \approx 12 \text{ Btu in.}/168 \text{ hr} \cdot \text{F} \approx 1 \text{ Btu/hr ft}^2 \cdot \text{F} @ \text{ m.c.} = 3\% \text{ and } \gamma_D = 120 \text{ pcf} \\ (\text{Figure 4.2.3})$$

$$\pi = 2.0$$

$$\Theta_T = 1102 \text{ } ^\circ\text{F-Days}$$

$$\text{m.c.} = 3\%$$

$$\gamma_D = 120 \text{ pcf}$$

$$L = 143 \text{ BTU/lbm}$$

S.O. No. 102396Subject: Thule FY-05 DormitoryThaw Depth CalcsSheet No. 2 of 3

Drawing No. _____

Computed by MDCChecked By DSJDate 7/13/04**Baker** $\lambda = \text{SEE PAGE 3}$ where $x_1 = \text{volumetric fraction of liquid}$

$$x_1 = (m.c)(\gamma_D)/(62.4)$$

$$= (0.03)(120)/(62.4)$$

$$x_1 = 0.05$$

$$\alpha = \frac{|T_0 - T_f| t}{\pi \cdot \Theta_T}$$

 $T_0 = \text{mean annual temperature } (12^\circ \text{F})$ $T_f = \text{freezing temperature } (32^\circ \text{F})$ $t = \text{number of thawing days } (100)$

$$\alpha = \frac{|12 - 32| 100}{(2)(1102)}$$

$$\alpha = 0.9$$

$$\mu = \frac{C_t \cdot \pi \cdot \Theta_T}{2 \cdot L_v \cdot t}$$

 $C_t = \text{volumetric heat capacity of the soil}$
(Btu/ft³°F) $L_v = \text{volumetric latent heat (Btu/ft}^3\text{)}$

S.O. No. 102396Subject: Thule FY-05 DormitoryThaw Depth CalcsSheet No. 3 of 3

Drawing No. _____

Computed by MDCChecked By DryDate 7/13/04**Baker**

$$C_t = 25 \text{ BTU/ft}^3 \text{ } ^\circ\text{F} \quad (\text{Figure 4.5.21})$$

$$L_v = \gamma_o \cdot (mc) \cdot (L)$$

$$= (120)(0.03)(143)$$

$$L_v = 514.8 \text{ BTU/ft}^3$$

$$\mu = \frac{(25 \text{ BTU/ft}^3 \text{ } ^\circ\text{F})(2)(1102^\circ\text{F} \cdot \text{Days})}{(2)(514.8 \text{ BTU/ft}^3)(100 \text{ Days})}$$

$$\mu = 0.54$$

$$\lambda = 0.53, \quad x_1 = 0.0 \quad \text{Figure 4.2.5}$$

$$\lambda = 0.55, \quad x_1 = 0.4 \quad \text{Figure 4.2.8}$$

$$\text{for } x_1 = 0.05 \quad \text{use } \lambda = 0.53$$

$$x_T = 0.53 \left| \frac{(2) \cdot (24) \cdot (1 \text{ BTU/hr ft}^2 \text{ } ^\circ\text{F})(2)(1102^\circ\text{F} \cdot \text{Days})}{(0.03)(120 \text{ lb/ft}^3)(143 \text{ BTU/lbm})} \right|^{1/2}$$

$$x_T = 7.6 \text{ ft} \approx 2.3 \text{ meters}$$

Design and Mean Freezing and Thawing Indexes for Thule AB, Greenland

The Cold Regions Research and Engineering Laboratory (CRREL) requested the Air Force Combat Climatology Center (AFCC) to determine the design and mean freezing and thawing indices for Thule AB using the foundation definition for those indexes in TM 5-852-1, Arctic and Subarctic Construction - General Provisions.

AFCCC used the most complete series of Summary of the Day (includes maximum and minimum daily temperatures) for Thule covering the period of 1969 to 1999.

The results of this analysis are presented below:

Index	°C-days	°F-days	Design Season
Design Freezing Index	5453	9815	1982-83
Mean Freezing Index	4617	8311	
Design Thawing Index	612	1102	1988
Mean Thawing Index	331	596	

Note: the thawing index for 1957 was 660 °C-days in 1957 but it was outside of the most recent 30 year period used to determine the values above.

The following definitions of the indexes are from TM 5-852-1:

Design Freezing Index: For design of foundations for average permanent structures, the design freezing index should be computed for the coldest winter in 30 years of record or should be estimated to correspond with this frequency if the number of years of record is limited. Periods of record used should be the latest available.

Mean Freezing Index: The freezing index determined on the basis of mean temperatures.

Design Thawing Index: The design thawing index is computed on the same frequency and other bases as the design freezing index, except that summer thaw conditions are used.

Mean Thawing Index: The thawing index determined on the basis of mean temperatures.

Data for Thule AB was complete for the period of 1952 to 1999. AFCCC also processed that period and found only minor differences of about 1% from the 30 year values given above.

Recommend that these indexes be used for foundation design at Thule AB, Greenland.

Regards,
James Buska and Alan Greateorex
Engineer Research and Development Center (ERDC)
Cold Regions Research and Engineering Laboratory (CRREL)
72 Lyme Road, Hanover, NH 03755-1290
Tel: 603-646-4588, Fax: 603-646-4640
E-mail: jbuska@crrel.usace.army.mil

July 13, 2004

Page 1 of 1

TABLE 4.2.1 n Factor Data for General Surfaces^a

Surface Type	Freezing		Thawing		Location
	n	θ_A (°F day) ^b	n	θ_A (°F day) ^b	
Spruce trees, brush, moss over peat soil	.29	5042	.37	3055	Fairbanks, AK
Brush and trees cleared, moss in place, peat soil	.25	5042	.73	3055	Fairbanks
Vegetation and 16 in. of soil stripped clean	.33	5042	1.22	3055	Fairbanks
Turf	.5	—	1.0	—	Alaska and Greenland
Snow	1.0	—	—	—	Greenland
Sand and gravel	.9	—	2.0	—	Greenland
Gravel	.76	5042	1.99	3055	Fairbanks, AK
Gravel	.63	5042	2.01	3055	Fairbanks
Gravel	.6	5042	1.4	3055	Fairbanks
Elevated building	—	—	1.0	—	Fairbanks
Pavement w/o snow	.9	—	—	—	Fairbanks
Pavement N of 45°N	.9	—	—	—	General
Gravel	1.0	5400	1.47	2440	Chitina, AK
Gravel colored dark	—	—	1.40	3320	Fairbanks, AK
Sandy Soil with Snow	.49	1908	—	—	Lakselv, Norway
	.02	2034	—	—	Os, Norway
	.53	342	—	—	Amli, Norway
	1.39	234	—	—	Amli, Norway
General	.8	—	—	—	Southern Canada
General	.9	—	—	—	Northern Canada
Gravel	—	—	1.5	2680	Fairbanks, AK
Gravel colored dark stripped soil	—	—	1.27	2720	Fairbanks
1 season	—	—	.8	—	Fairbanks
2 seasons	—	—	.93	—	Fairbanks
Clear polyethylene over stripped soil	—	—	1.08	—	Fairbanks
1 season	—	—	1.16	—	Fairbanks and Clear
2 seasons	—	—	—	—	—
Polyethylene over asphalt on gravel	—	—	1.30	—	Fairbanks
2 seasons	—	—	1.58	—	Fairbanks
Gravel over stripped soil	—	—	.75	—	Fairbanks
1 season	—	—	1.05	—	Fairbanks
2 seasons	—	—	—	—	—

^aFrom Lunardini (1981).^bMultiply °F day by 0.556 for °C day.

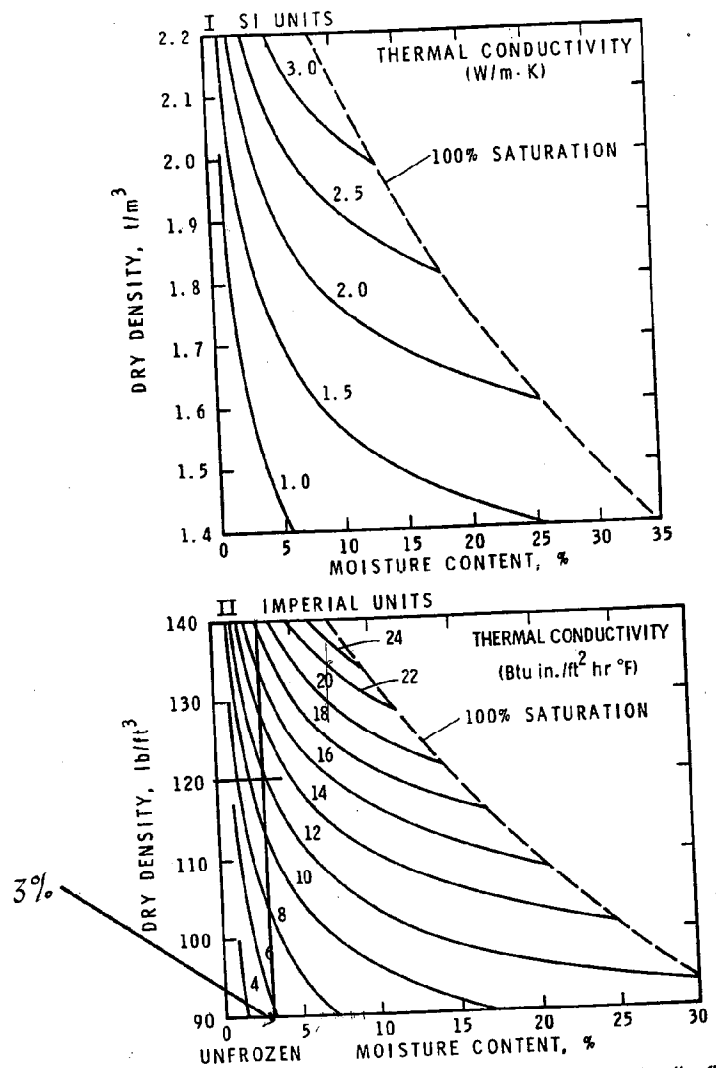


Figure 4.2.3. Thermal conductivities of unfrozen coarse-grained soils. (From *Journal of Permafrost Engineering Design and Construction*, 1981, John Wiley & Sons)

absence of exact values for unfrozen water content, this becomes somewhat a guess, but it follows the philosophy of "a guess in the right direction is better than no guess at all."

As soil freezes, the heat that must be removed to cool the soil to its freezing point and the latent heat released as the liquid changes to ice must be considered.

TABLE 4.2.5 Approximate Unfrozen Water Content (%) of Selected Clay Soils at Various Temperatures

Soil	Temperature °F (°C)			
	31 (-5)	28 (-2)	24 (-4)	21 (-6)
Leda ^a	≈20	7	3	2.5
Kaolinite ^b	≈20	2	1.5	1
Montmorillonite ^b	>50	40-50	32-44	30-42

^aWilliams (1962).^bNersisova and Tsytoich (1963).

used when calculating depth of thaw. There is a sizable difference between the frozen and thawed thermal conductivities of soil; the incorrect value can result in a substantial error. When calculating depth of thaw, remember also to use the thawing index and an appropriate n ratio for thawing instead of the freezing values.

λ is used to account for the soil thermal mass. It is a function of mean annual temperature, the freezing (or thawing) index, and the thermal properties of the particular soil under consideration. Figures 4.2.5 through 4.2.10

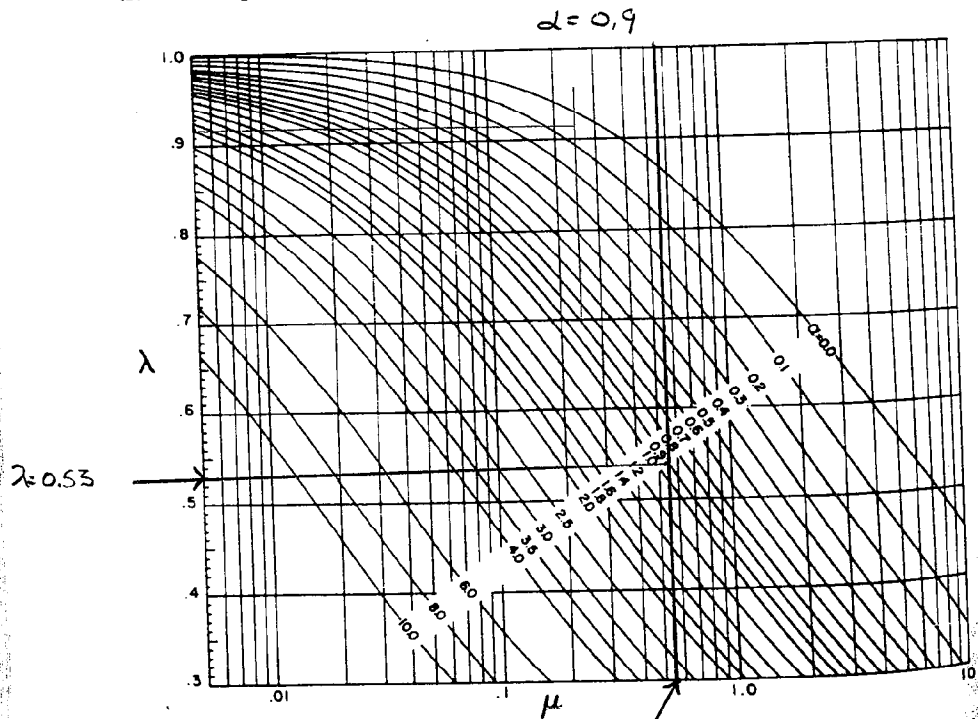


Figure 4.2.5. λ value for modified Berggren equation for freeze or thaw case when $X_i = 0.0$. (From Lunardini 1988.)

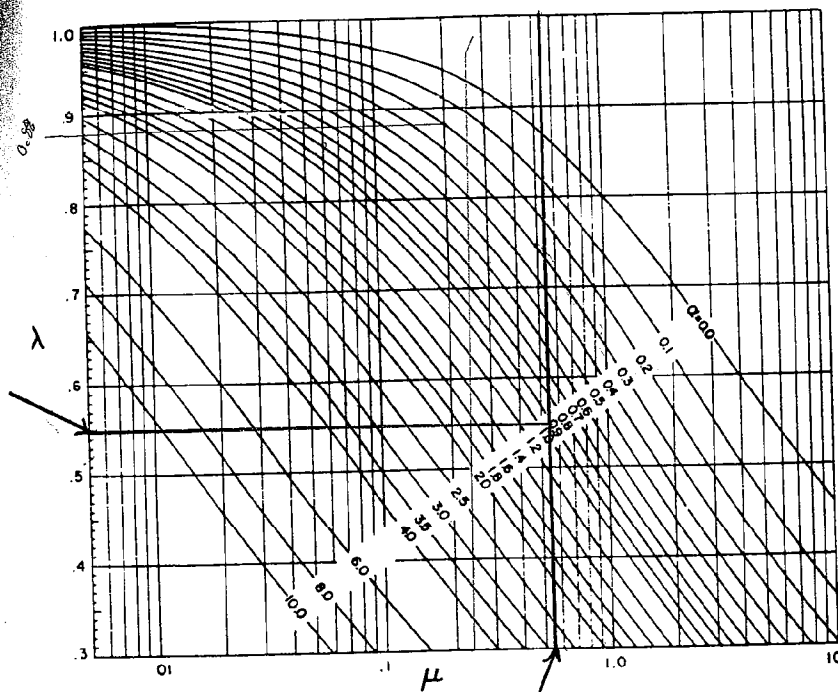


Figure 4.2.8. λ value for modified Berggren equation for thawing case when $X_i = 0.4$. (From Lunardini 1988.)

determined from the appropriate graph, Figures 4.2.5 through 4.2.10. Once the value of λ is determined the depth of freeze or thaw can be calculated from the modified Berggren equation 4.2.1.

If λ is removed from the modified Berggren equation the result is another widely recognized equation that is called the Stefan equation. This equation is derived in Chapter 8 and is often used to determine the thickness of ice growth. λ is seen to vary from 0 to 1. Typical values of λ are from 0.75 to 0.95 for northern soils and conditions. The effect of neglecting the λ value would therefore be to over predict the depth of freeze or thaw by about 25% in the worst case (more often the error is less than 15%). Considering the discussion at the beginning of this chapter concerning the errors that are inherent in soil calculations in general, it is tempting to use the Stefan equation and to avoid the added complexity and time involved in solving for λ . The fact that the Stefan equation overpredicts makes it desirable in some design cases such as

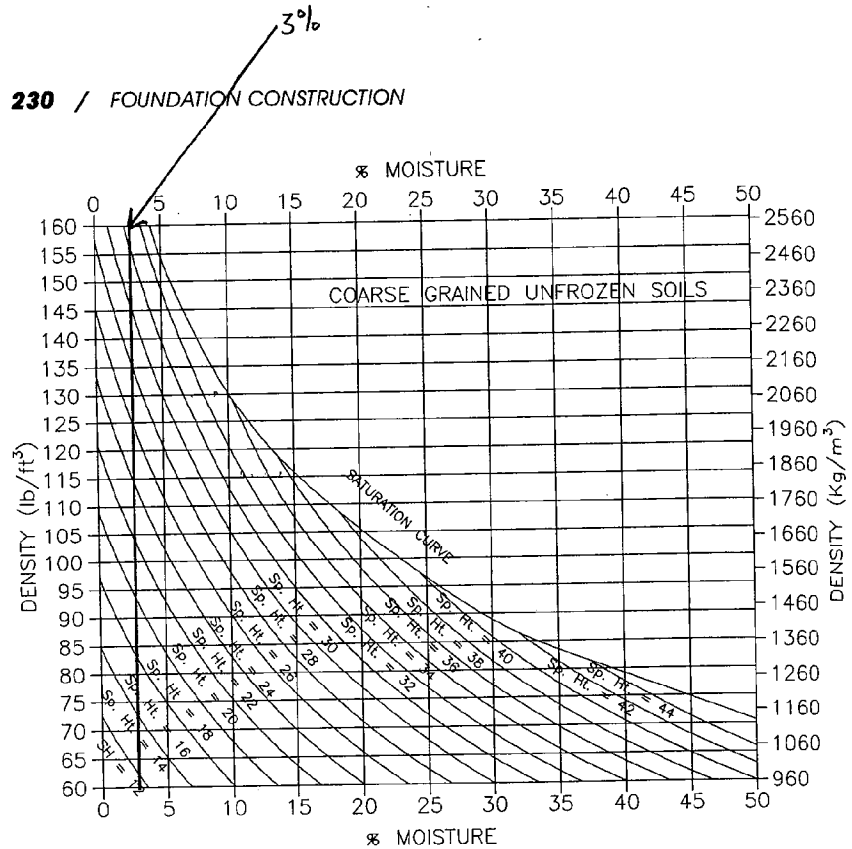


Figure 4.5.21. Specific heat of coarse-grained unfrozen soils (BTU/ft³·F). (After Kersten 1949.)

$$Q_T = Q_s + Q_L = V_a \gamma_{ds} \{ [(m.c.)(c_w) + c_{ds}](T_{sl} - T_f) + [(m.c.)(c_i) + c_{ds}](T_f - T_{pf}) + (m.c.)L \}$$

where:

- γ_{ds} = dry density of the soil = 120 pcf
- $m.c.$ = moisture content of the slurry = .13
- V_a = volume of the slurry annulus
 $= \pi/4[(16/12)^2 - (10/12)^2] = 0.85 \text{ ft}^3/\text{ft}$
- c_w = specific heat of water = 1.0 BTU/lb °F
- c_{ds} = specific heat of the dry slurry
 $= 35 \text{ BTU/ft}^3 \text{ °F} = 0.56 \text{ BTU/lb}_m \text{ °F}$ (from Fig 4.5.21)
- c_i = specific heat of ice = 0.49 BTU/lb_m °F
- T_{sl} = temperature of the slurry = 40 °F
- T_{pf} = temperature of the permafrost = 10 °F
- T_f = freezing temperature = 32 °F
- L = latent heat of freezing = 143.3 BTU/lb_m

The total heat is then:

r/c

Fig
Ann

The

S.O. No. 102396Subject: Thule FY-05 DormitoryFreeze Depth CalcsSheet No. 1 of 3

Drawing No. _____

Computed by MDCChecked By ISYDate 7/13/04**Baker**MODIFIED BERGGREN EquationREFERENCE: CONSTRUCTION IN COLD REGIONSBy TERRY McFADDEN AND F. LAWRENCE BENNETT

$$X_F = \lambda \left| \frac{(2)(24) K_F n \Theta_F}{m.c. (\gamma_D) L} \right|^{1/2}$$

 λ = Thermal coefficient K_F = Thermal conductivity of soil (Btu/hr ft² °F) n = ratio of surface freezing index to air freezing index Θ_F = Air Freezing Index (°F-Days)

m.c. = moisture content

 γ_D = Dry density of soil (lbm/ft³) L = Latent heat of fusion of the water

$$K_F \approx 9 \text{ Btu in./62 hr } ^\circ\text{F} \approx 0.75 \text{ Btu/hr ft } ^\circ\text{F} @ \text{ m.c.} = 3\% \text{ AND } \gamma_D = 120 \text{ pcf} \\ (\text{Figure 4.2.4})$$

$$n = 0.9$$

$$\Theta_F = 8311 \text{ } ^\circ\text{F-DAYS}$$

$$\text{m.c.} = 3\%$$

$$\gamma_D = 120 \text{ pcf}$$

$$L = 143 \text{ BTU/lbm}$$

S.O. No. 102396Subject: Thule FY-05 DormitoryFREEZE Depth CalsSheet No. 2 of 3

Drawing No. _____

Computed by MDCChecked By DSJDate 7/13/04**Baker** $\lambda =$ SEE PAGE 3where $X_1 =$ volumetric fraction of liquid

$$X_1 = (m.c)(\gamma_D)/(62.4)$$

$$= (0.03)(120)/(62.4)$$

$$X_1 = 0.05$$

$$\alpha = \frac{|T_0 - T_f| t}{\pi \cdot \Theta_F}$$

 $T_0 =$ mean annual temperature (12°F) $T_f =$ freezing temperature (32°F) $t =$ number of freezing days (265)

$$\alpha = \frac{|12 - 32| 265}{(2)(8311)}$$

$$\alpha = 0.32$$

$$\mu = \frac{C_t \cdot \pi \cdot \Theta_F}{2 \cdot L_v \cdot t}$$

 $C_t =$ volumetric heat capacity of the soil
($\text{Btu}/\text{ft}^3 \cdot ^\circ \text{F}$) $L_v =$ volumetric latent heat (Btu/ft^3)

S.O. No. 102396
Subject: Thule FY-05 Dormitory
FREEZE Depth Calcs

Baker

Sheet No. 3 of 3

Drawing No. _____

Computed by MDC Checked By DSJ Date 7/13/04

$$C_F = 21 \text{ BTU/ft}^3 \text{ } ^\circ\text{F} \quad (\text{Figure 4.5.20})$$

$$L_v = \gamma_0 \cdot (mc) \cdot (L)$$
$$= (120)(0.03)(143)$$

$$L_v = 514.8 \text{ BTU/ft}^3$$

$$\mu = \frac{(21 \text{ BTU/ft}^3 \text{ } ^\circ\text{F})(0.9)(8311 \text{ } ^\circ\text{F} \cdot \text{Days})}{(2)(514.8 \text{ BTU/ft}^3)(265 \text{ Days})}$$

$$\mu = 0.58$$

$$\lambda = 0.71, \quad x_i = 0.0 \quad \text{Figure 4.2.5}$$

$$\lambda = 0.69, \quad x_i = 0.4 \quad \text{Figure 4.2.6}$$

$$\text{For } x_i = 0.05 \text{ we use } \lambda = 0.71$$

$$X_T = 0.71 \left| \frac{(2) \cdot (24)(0.75 \text{ BTU/hr-ft } ^\circ\text{F})(0.9)(8311 \text{ } ^\circ\text{F} \cdot \text{Days})}{(0.03)(120 \text{ lb/ft}^3)(143 \text{ BTU/lbm})} \right|^{1/2}$$

$$X_T = 16.2 \text{ ft} \approx 4.9 \text{ meters}$$

Design and Mean Freezing and Thawing Indexes for Thule AB, Greenland

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Note: the thawing index for 1957 was 660 °C-days in 1957 but it was outside of the most recent 30 year period used to determine the values above.

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Mean Thawing Index: The thawing index determined on the basis of mean temperatures.

Data for Thule AB was complete for the period of 1952 to 1999. AFCCC also processed that period and found only minor differences of about 1% from the 30 year values given above.

Recommend that these indexes be used for foundation design at Thule AB, Greenland.

Regards,
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Engineer Research and Development Center (ERDC)
Cold Regions Research and Engineering Laboratory (CRREL)
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Tel: 603-646-4588, Fax: 603-646-4640
E-mail: jbuska@crrel.usace.army.mil

July 13, 2004

Page 1 of 1

TABLE 4.2.1 n Factor Data for General Surfaces^a

Surface Type	Freezing		Thawing		Location
	n	θ_A (°F day) ^b	n	θ_A (°F day) ^b	
Spruce trees, brush, moss over peat soil	.29	5042	.37	3055	Fairbanks, AK
Brush and trees cleared, moss in place, peat soil	.25	5042	.73	3055	Fairbanks
Vegetation and 16 in. of soil stripped clean	.33	5042	1.22	3055	Fairbanks
Turf	.5	—	1.0	—	Alaska and Greenland
Snow	1.0	—	—	—	Greenland
Sand and gravel	.9	—	2.0	—	Greenland
Gravel	.76	5042	1.99	3055	Fairbanks, AK
Gravel	.63	5042	2.01	3055	Fairbanks
Gravel	.6	5042	1.4	3055	Fairbanks
Elevated building	—	—	1.0	—	Fairbanks
Pavement w/o snow	.9	—	—	—	Fairbanks
Pavement N of 45°N	.9	—	—	—	General
Gravel	1.0	5400	1.47	2440	Chitina, AK
Gravel colored dark	—	—	1.40	3320	Fairbanks, AK
Sandy Soil with Snow	.49	1908	—	—	Lakselv, Norway
	.02	2034	—	—	Os, Norway
	.53	342	—	—	Amli, Norway
	1.39	234	—	—	Amli, Norway
General	.8	—	—	—	Southern Canada
General	.9	—	—	—	Northern Canada
Gravel	—	—	1.5	2680	Fairbanks, AK
Gravel colored dark	—	—	1.27	2720	Fairbanks
Stripped soil	—	—	.8	—	Fairbanks
1 season	—	—	.93	—	Fairbanks
2 seasons	—	—	—	—	—
Clear polyethylene over stripped soil	—	—	1.08	—	Fairbanks
1 season	—	—	1.16	—	Fairbanks and Clear
2 seasons	—	—	—	—	—
Polyethylene over asphalt on gravel	—	—	1.30	—	Fairbanks
2 seasons	—	—	1.58	—	Fairbanks
Gravel over stripped soil	—	—	.75	—	Fairbanks
1 season	—	—	1.05	—	Fairbanks
2 seasons	—	—	—	—	—

^aFrom Lunardini (1981).^bMultiply °F day by 0.556 for °C day.

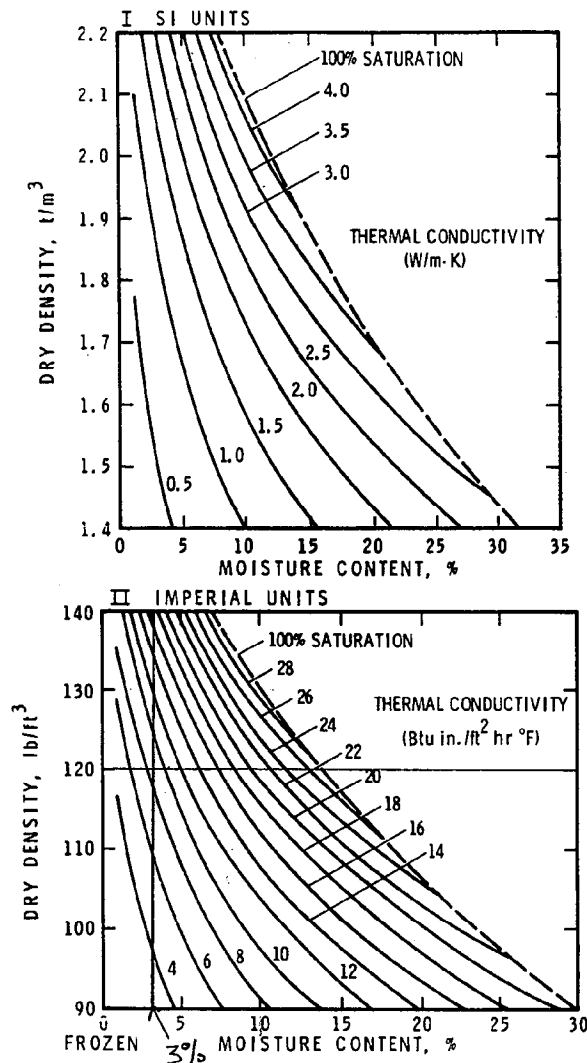


Figure 4.2.4. Thermal conductivities of frozen coarse-grained soils. (From Johnston 1981, Permafrost Engineering Design and Construction. Reprinted with permission from John Wiley & Sons.)

transferred from the freezing front to the surface through soil that is already frozen. Therefore, if the depth of frost is to be calculated, the thermal conductivity of frozen soil should be used.

When the soil thaws, heat from the surface moves to the thawing front through thawed soil, therefore the thawed soil thermal conductivity must be

TABLE 4.2.5 Approximate Unfrozen Water Content (%) of Selected Clay Soils at Various Temperatures

Soil	Temperature °F (°C)			
	31 (-5)	28 (-2)	24 (-4)	21 (-6)
Leda ^a	~20	7	3	2.5
Kaolinite ^b	~20	2	1.5	1
Montmorillonite ^b	>50	40-50	32-44	30-42

^aWilliams (1962).^bNeresova and Tsytoich (1963).

used when calculating depth of thaw. There is a sizable difference between the frozen and thawed thermal conductivities of soil; the incorrect value can result in a substantial error. When calculating depth of thaw, remember also to use the thawing index and an appropriate n ratio for thawing instead of the freezing values.

λ is used to account for the soil thermal mass. It is a function of mean annual temperature, the freezing (or thawing) index, and the thermal properties of the particular soil under consideration. Figures 4.2.5 through 4.2.10

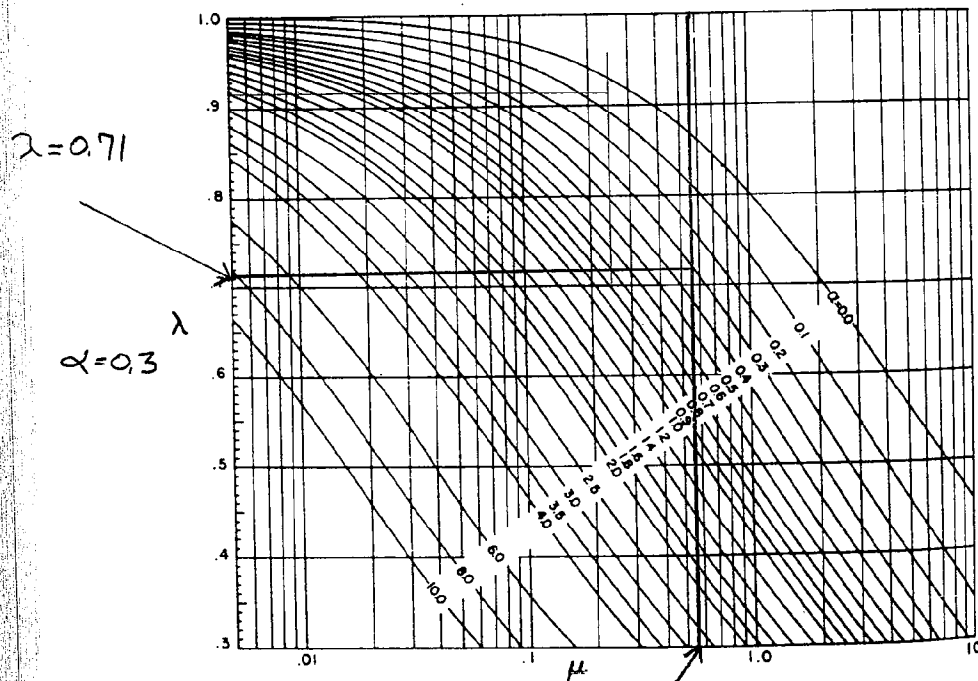


Figure 4.2.5. λ value for modified Berggren equation for freeze or thaw case when $X_f = 0.0$. (From Lunardini 1988.)

$$\lambda = 0.69$$

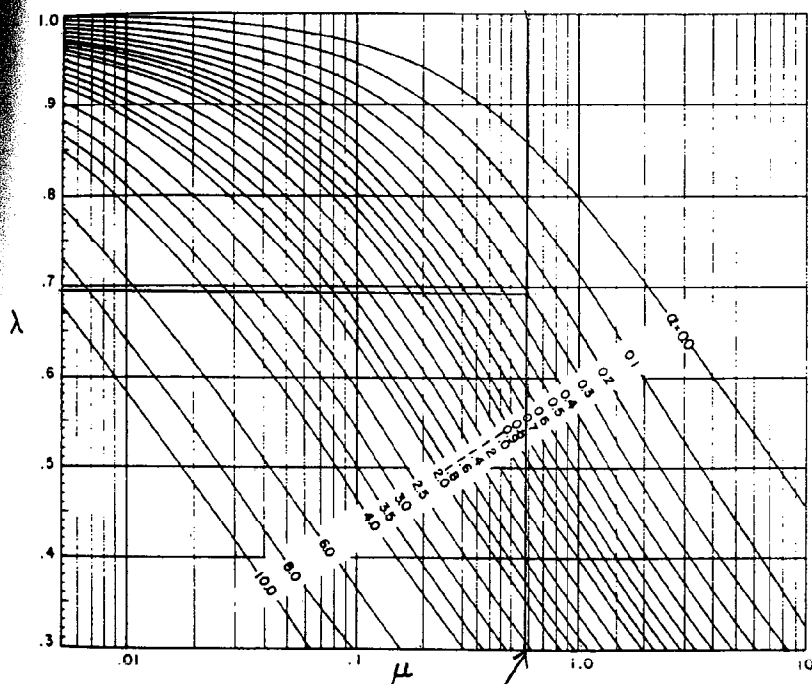


Figure 4.2.6. λ value for modified Berggren equation for freezing case when $X_i = 0.4$. (From Lunardini 1988.)

$$\mu = 0.58$$

give a convenient means of determining λ from commonly known soil parameters. α and μ are defined as the thermal ratio and the fusion parameter, respectively. α is given by:

$$\alpha = \frac{|T_0 - T_f|t}{n\theta_A} \quad (4.2.2)$$

Where:

- T_0 = mean annual temperature for the site
- T_f = the freezing temperature (32°F or 0°C)
- $|T_0 - T_f|$ = the absolute value of the temperature difference (always a positive value)
- t = number of days of freezing (or thawing) that have accumulated since the start of the season.

The fusion parameter μ is given by:

$$\alpha = 0.3$$

SHALLOW
FROST PENETRATION

TEMPERATURE
FROST PENETRATION

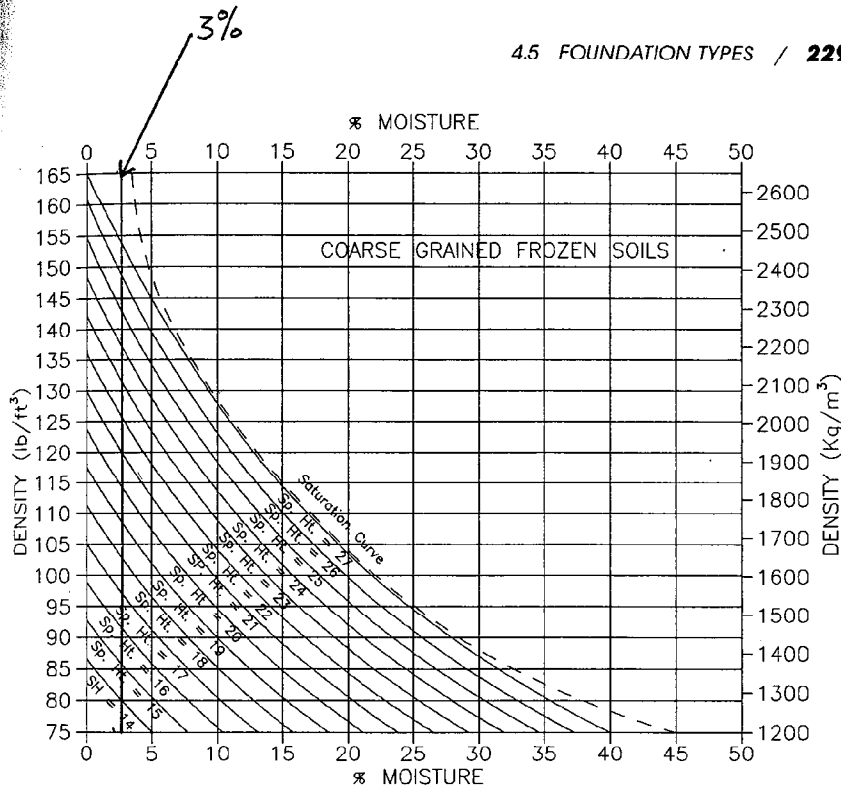


Figure 4.5.20. Specific heat of coarse-grained frozen soils (BTU/ft³°F). (After Kersten 1949.)

where the average permafrost temperature is below 20°F (−7°C), a temperature rise of 4 or 5°F (2 or 3°C) is probably acceptable. But if the site is near the southern border of continuous permafrost where average temperatures may be 28 to 30°F (−2 to −1°C), then a one degree rise may be too much. This is a judgement call and best made by an experienced engineer. For reference as to how the temperature affects the adfreeze bond, see Figure 4.5.13 which shows the relationship between adfreeze bond strength and temperature as reported by several researchers in this field.

Example 4.5.1 A 10 in. (25.4 cm) diameter pile is slurried into a 16 in. (41 cm) diameter hole. The slurry is sand and water at a temperature of 40°F. The slurry has an in-place dry density of 120 pcf (1920 kg/m³) and a moisture content of 13%. The permafrost is silt with a dry density of 80 pcf (1280 kg/m³) and a moisture content of 37%. Find the pile freezeback time for a site in the far north where the permafrost temperature is 10°F (−12°C) and for a site near the southern limit of permafrost where the permafrost temperature is 30°F (−1°C).

Solution: The total heat (Q_T) added by the slurry is found by combining equations 4.5.3, 4.5.4 and 4.5.5:

Depth of Thaw and Freeze using Berg 2 Software
Calcs by: M.Cox (13-July-04)
Calcs Checked by: *MS*

Thule FY-05 Dormitory Site

Design Parameters

Design Freezing Index (°F-Days)	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815	9815
Mean Freezing Index (°F-Days)	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311	8311
Design Thawing Index (°F-Days)	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102	1102
Mean Thawing Index (°F-Days)	596	596	596	596	596	596	596	596	596	596	596	596	596	596	596	596	596	596	596
Freeze N Factor	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Thaw N Factor	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Layer 1

Moisture Content (%)	3.0	1.0	3.0	3.0	3.0	3.0	3.6	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Frozen Unit Weight (pcf)	120	120	120	120	120	120	7	120	120	120	120	120	120	120	110	110	110	125	125
Layer Thickness (ft)	5	5	5	5	7	7	7	3	3	3	5	5	7	5	7	5	7	7	7

Layer 2

Moisture Content (%)	6	6	9	28	5.6	8.9	8.9	5.6	8.9	12.3	28	5.6	28	5.6	28	5.6	28	5.6	5.6
Frozen Unit Weight (pcf)	110	110	91	110	110	110	110	110	110	110	91	125	91	125	91	125	91	125	125
Layer Thickness (ft)	5	5	5	5	3	3	7	7	7	5	5	3	5	3	5	3	5	3	3
Depth of Thaw (ft)	7.3	5.7	6.6	5.6	8.0	7.6	7.3	6.5	6.2	5.4	7.4	5.7	8.0	5.7	8.0	5.7	8.0	5.7	8.0
Depth of Freeze (ft)	11.8	8.5	10.8	7.9	11.9	11.3	12.2	12.0	9.8	6.8	9.8	8.5	12.5	8.5	12.5	8.5	12.5	8.5	12.5
Depth of Thaw (m)	2.2	1.7	2.0	1.7	2.4	2.3	2.2	2.0	1.9	1.6	2.3	1.7	2.4	1.7	2.4	1.7	2.4	1.7	2.4
Depth of Freeze (m)	3.6	2.6	3.3	2.4	3.6	3.4	3.7	3.7	3.0	2.1	3.0	2.6	3.8	2.6	3.8	2.6	3.8	2.6	3.8

Summary

Thaw Depth Range	1.6 to 2.4 meters (5.4 to 8.0 feet)
Freeze Depth Range	2.1 to 3.8 meters (6.8 to 12.5 feet)

LOCATION: Thule

THAW N: 2.00

FREEZ N: 0.90

MOIST: 11

THAW OF DAY: 1102

FREEZ OF DAY: 9815

THAW DAYS: 94

FREEZ DAYS: 271

ESTIMATED FREEZE=11.90

PRINT LOCATION SOIL QUIT

FROZEN % MOIS.	3.0	5.6
FROZEN DENS.	120.0	110.0
LATENT HEAT	518	887
FROZEN HEAT CAP	22.20	21.78
FROZEN COND.	0.68	0.77
THAWED % MOIS.	3.0	5.6
THAWED DENS.	120.0	110.0
THAWED HEAT CAP	24.00	24.86
THAWED COND.	0.97	0.97
INITIAL THICK	7.00	3.00
AMOUNT THAWED	7.00	0.98
CONSOLIDATION	7.00	3.00
FINAL THICK	7.00	3.00

FROZEN % MOIS.	3.0	5.6
FROZEN DENS.	120.0	110.0
LATENT HEAT	518	887
FROZEN HEAT CAP	22.20	21.78
FROZEN COND.	0.68	0.77
INITIAL THICK	7.00	3.00
AMOUNT FROZEN	7.00	4.90



REPLACE DORMITORY

Thule AB

GREENLAND

NOTE TO CONTRACTOR:

The scope of work to be performed in this contract is limited to the items contained in the Structural Interior Design (SID) portion of this document. The SID is a component of the overall Comprehensive Interior Design (CID) package. Items that are part of the CID but not the responsibility of the contractor have been removed from the document whenever practical for bidding purposes. The table of contents reflects these changes to the complete CID package.

Items that ARE NOT part of this contract include but are not limited to: furniture, linens, artwork, table lamps, cookware etc..

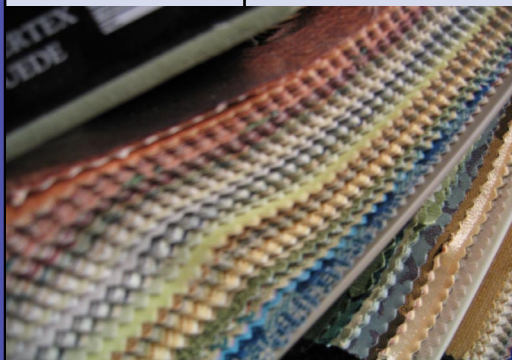
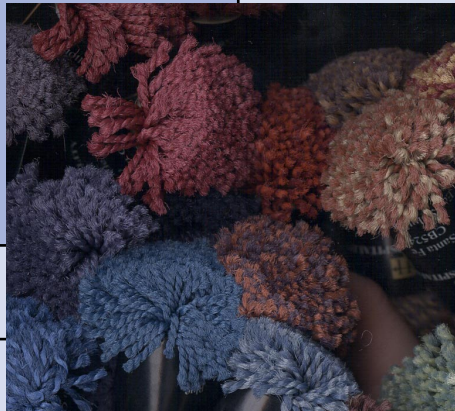
Items that ARE part of this contract and the responsibility of the contractor to purchase and install include but are not limited to: drapes, curtain rods, blinds, fixed mirrors, towel rods, toilet paper holders, corner guards, appliances, floor coverings, wall coverings, light fixtures etc..

SID/CID

**100%
SUBMISSION**

November 2004

**REVISED FOR BID
DECEMBER 2004**



Baker

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SID/CID 100% Submission

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CHAPTER 1

1.1 NARRATIVE OF INTERIOR DESIGN OBJECTIVES

The Structural Interior Design (SID) and Comprehensive Interior Design (CID) packages for the new Dormitory at Thule AB provide for the interior finishes and furnishings for this facility. This package is being developed to meet the finish and furnishing requirements for this project.

- A. **Function:** The relationship of all internal and external spaces has been developed to facilitate daily operations, provide operational efficiencies, and provide customer satisfaction.
- B. **Cost Effectiveness:** All the finishes and systems provided will reflect the best value for the Air Force in terms of aesthetic value and life-cycle costs. Consideration will be given to spending dollars in the most appropriate locations – the areas that provide the most impact on the customer’s experience.
- C. **Durability:** Selection of quality materials will ensure the facility will look good for years to come.
- D. **Maintainability:** Finishes will be selected to limit the maintenance requirements for those systems.
- E. **Compatibility:** The design of the new facility will be compatible with the other existing facilities present on the site. However, the success of the facility will depend on its ability to be a unique part of the overall complex. It must have it’s own identity apart from the rest of the facilities that exist but maintain the aesthetics already in place by the existing architecture to make a cohesive whole.
- F. **Design:** The design objective of this facility is simple. People should feel comfortable and “at home” for the duration of their stay at the Dormitory.
- G. **Creativity:** The project will rely on innovation and creativity relating to the existing themes present at this site. Providing the best value is the goal for the functions of this facility and the personnel who will use it.
- H. **Flexibility:** Systems, in particular will need to be selected with flexibility and future advancements in mind. Where possible, equipment will be mobile to allow future operational changes to occur with minimal cost and impact.
- I. **Timelessness:** The interior image of the Dormitory should stand the test of time minimizing being out dated. Materials, furnishings, and finishes that relate to a more timeless standard or that may be easily updated with minimal cost will be incorporated.

1.2 DESIGN CRITERIA

The design criteria for the FYO5 Replace Dormitory Project at Thule Air Base, Greenland has been developed from the Air Force Enlisted Dormitory Design Guide and specific requests from the base. Gitte Stenz, Chief of Base Lodging and Housing, and Renée Carelli, Contract Administrator, DET 1 at the American Embassy in Copenhagen supplied Baker with a list of usual furniture dealers and manufacturers in Denmark that had been previously used by the base for other projects. Iss Interfurn and several others were listed as options. Iss Interfurn, who was already delivering to Thule through Greenland Contractors, selected the furnishings based on some of the following criteria and provided pricing information. Baker selected finishes and other furnishing items based on these criteria as well.

- The furniture must be selected from Danish manufacturers and should be a natural beech finish.
- Any upholstered items should have blue upholstery.
- Lithonia and American Hotel Register were listed as preferred lighting manufacturers.
- American Hotel Register was approved as a supplier for other items such as kitchen accessories, trashcans, etc.
- Kitchen accessories should be selected based on what Baker feels are standard items.
- Abstract artwork with cool tones (blues and greens) is preferred; plexiglass with wood frame.
- The same artwork should be used for each floor.
- Aluminum blinds, roll-down blackout shades, and draperies will be used. A valance is not necessary.
- Currently the bedspreads are a solid color; however, AF standards recommend a patterned fabric to hide dirt and wear. The fabric must also be machine washable.
- Carpet tile is preferred and the color is normally grey or blue.
- Neutral colors should be used for permanent surfaces such as tile, solid surface counter materials, window blinds, etc.
- Color should be used in non-permanent finishes to add interest.

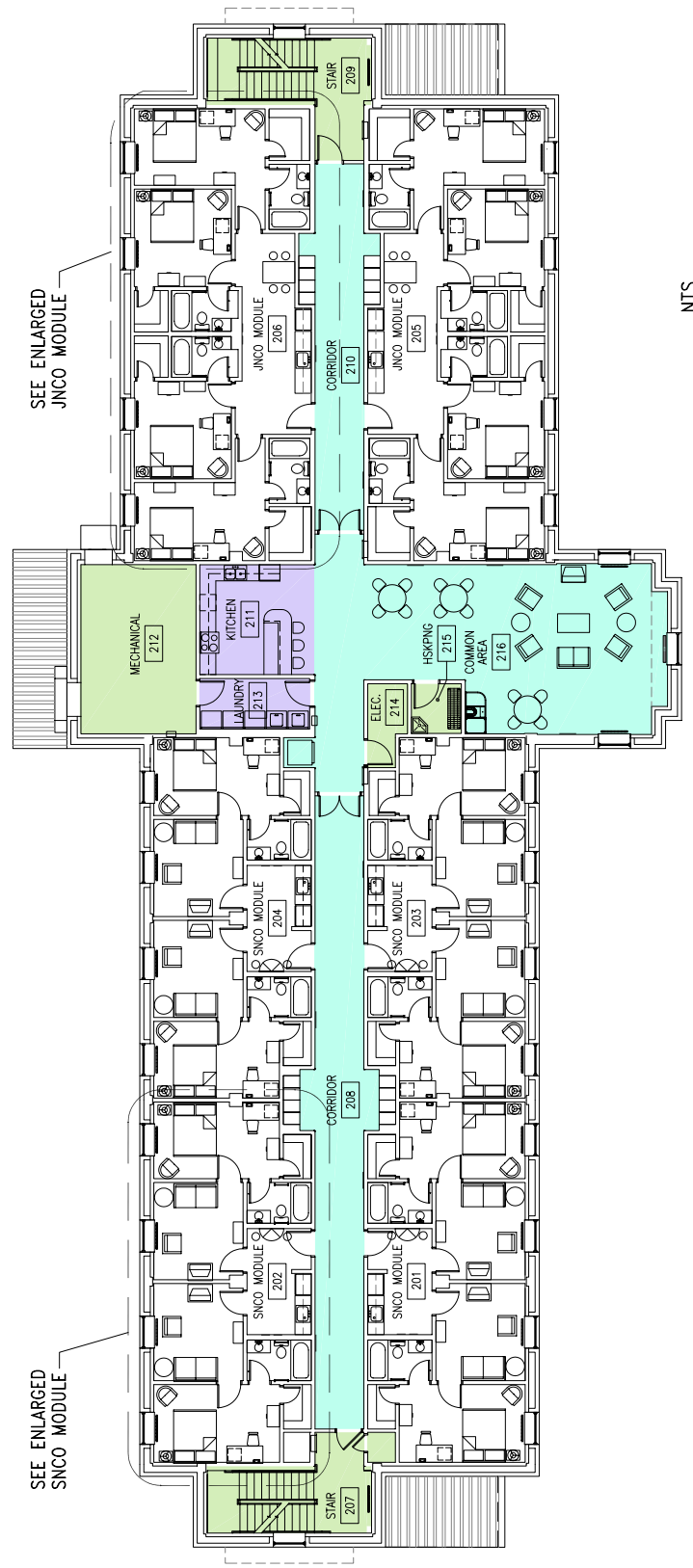
- It is important for the base to be able to support the dormitory and restock items. This should be taken into consideration when selecting items.

Refer to Appendix 4.2 Design Criteria for criteria justification.

Thule AB, Greenland Chapter 2

SID/CID 100% Submission





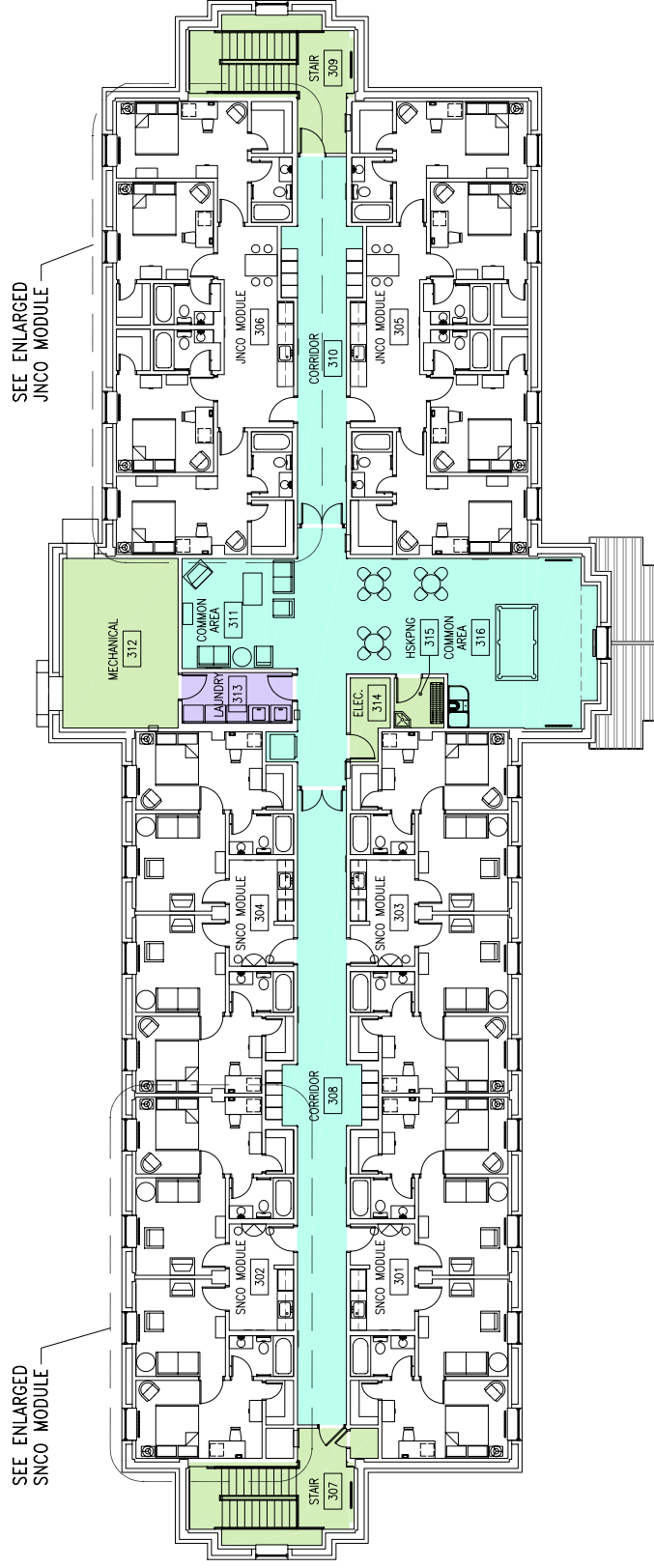
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INFORMATION AND PHOTOS.



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NOVEMBER 2004

COLOR ZONE PLAN – SECOND FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



NTS

LEGEND

- CPT-2, CPT-3
- RT, RST
- PT-1

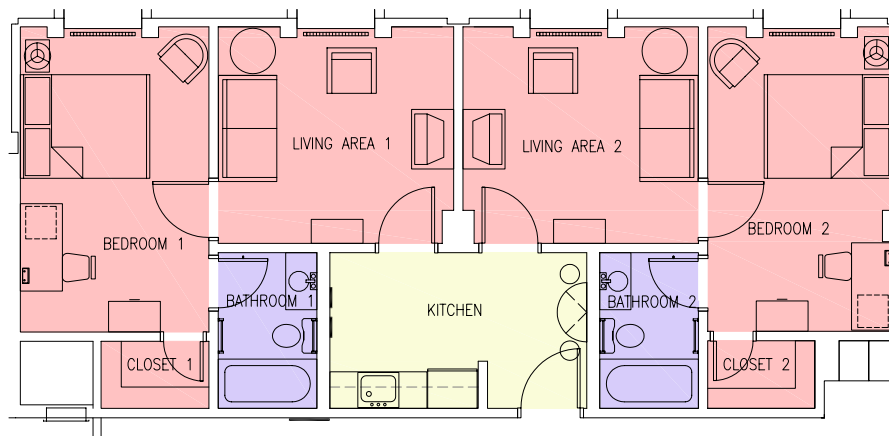
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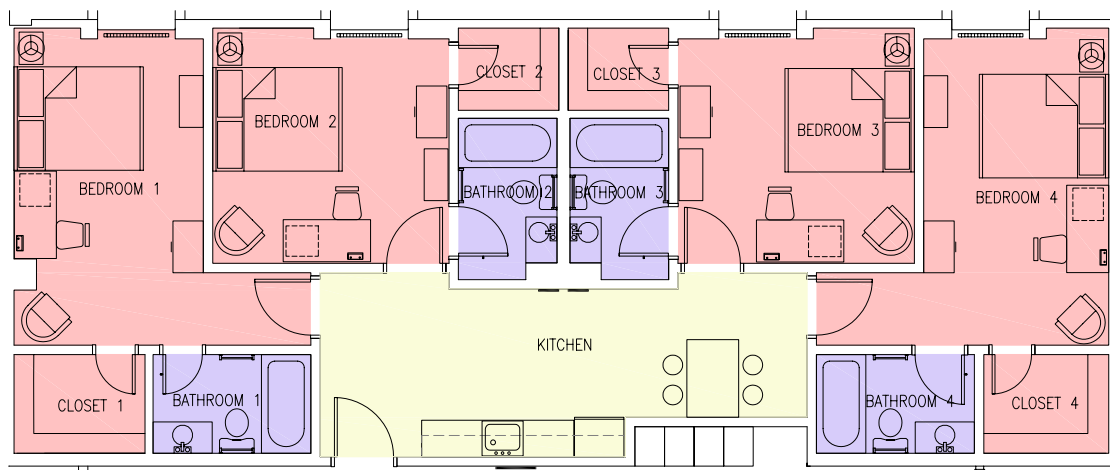
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COLOR ZONE PLAN – THIRD FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



SNCO TYPICAL MODULE



JNCO TYPICAL MODULE

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INFORMATION AND PHOTOS.

NTS

LEGEND

CPT-1

LIN

PT-1

Baker

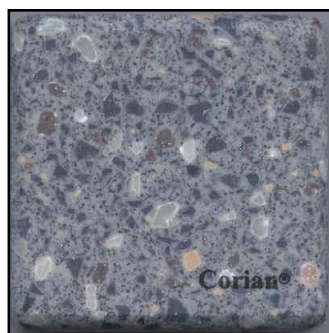
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SNCO/JNCO TYPICAL MODULES
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

2.2 INTERIOR COLOR BOARDS

2.2.1 VESTIBULE/STAIRWELLS



SS-3



WM



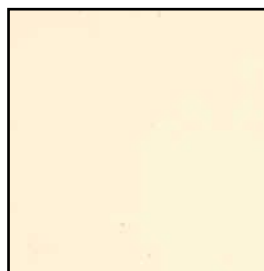
FG



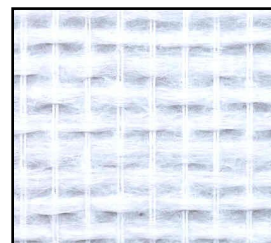
PT-1, PT-2



P-2



P-3



WC-2



P-7



RST

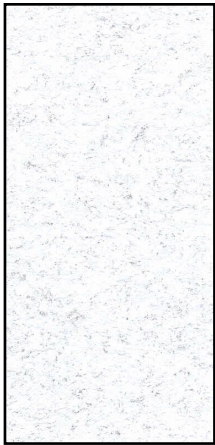


RB-1

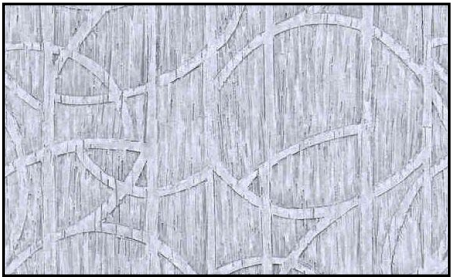


RT

2.2.2 CORRIDOR



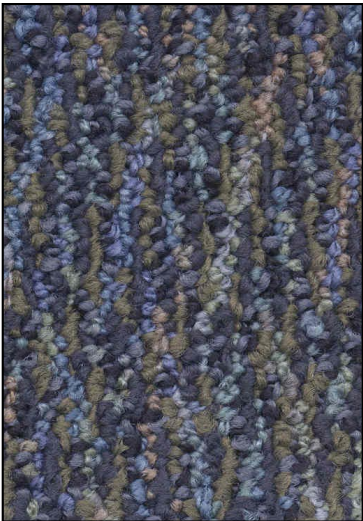
ACT



WC-1



CPT-3



CPT-2



RB-3

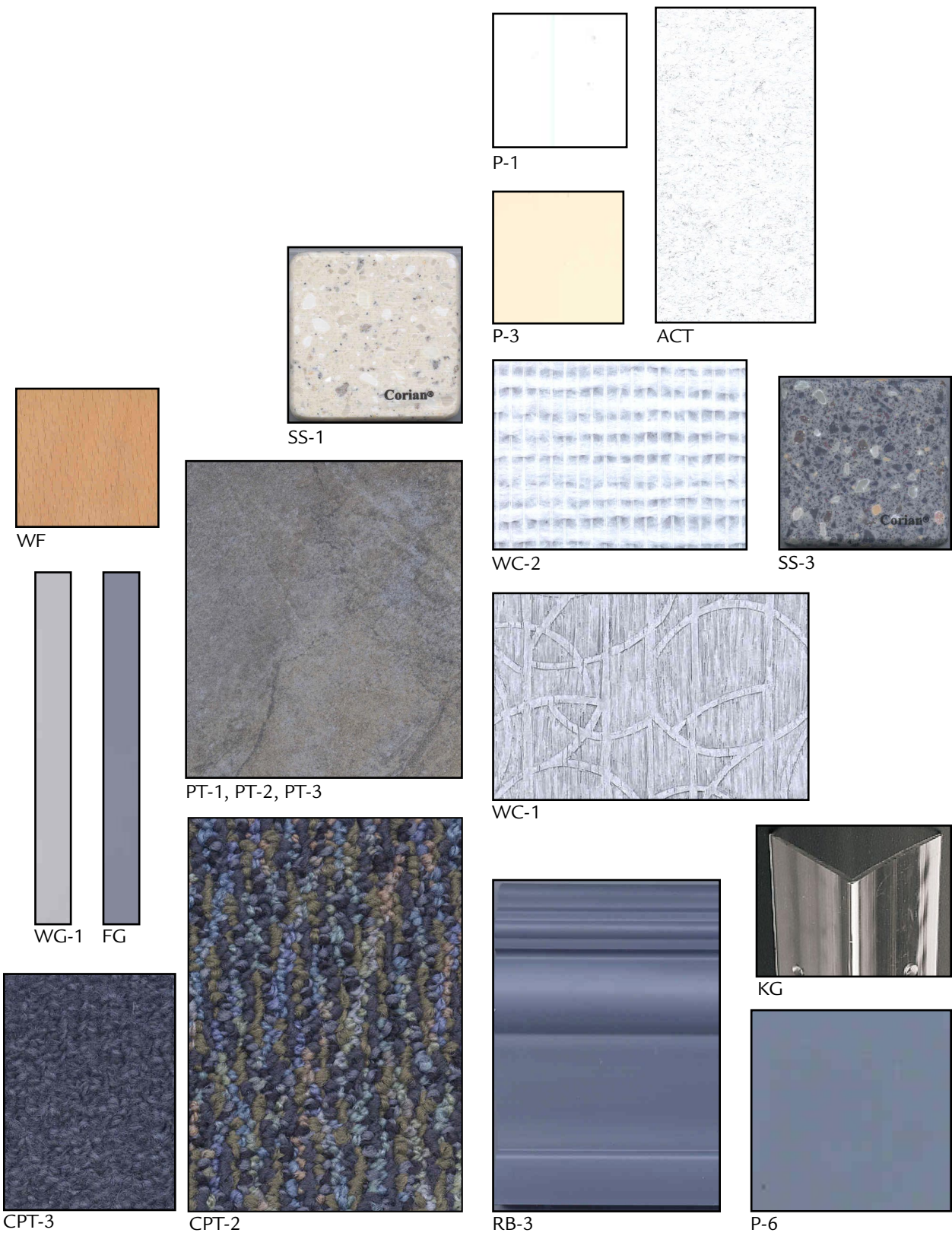


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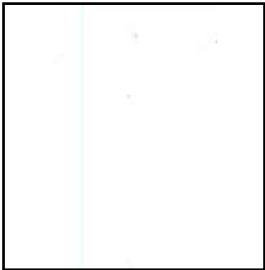


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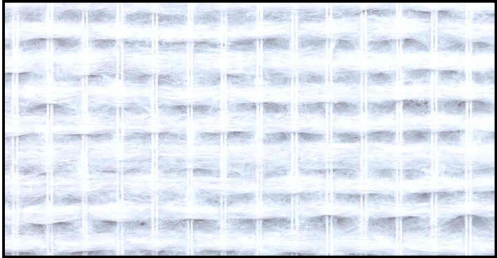
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2.2.5 HOUSEKEEPING/SUPPORT AREAS



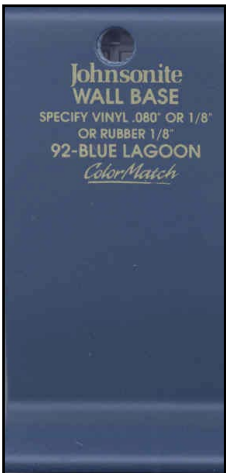
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WC-2

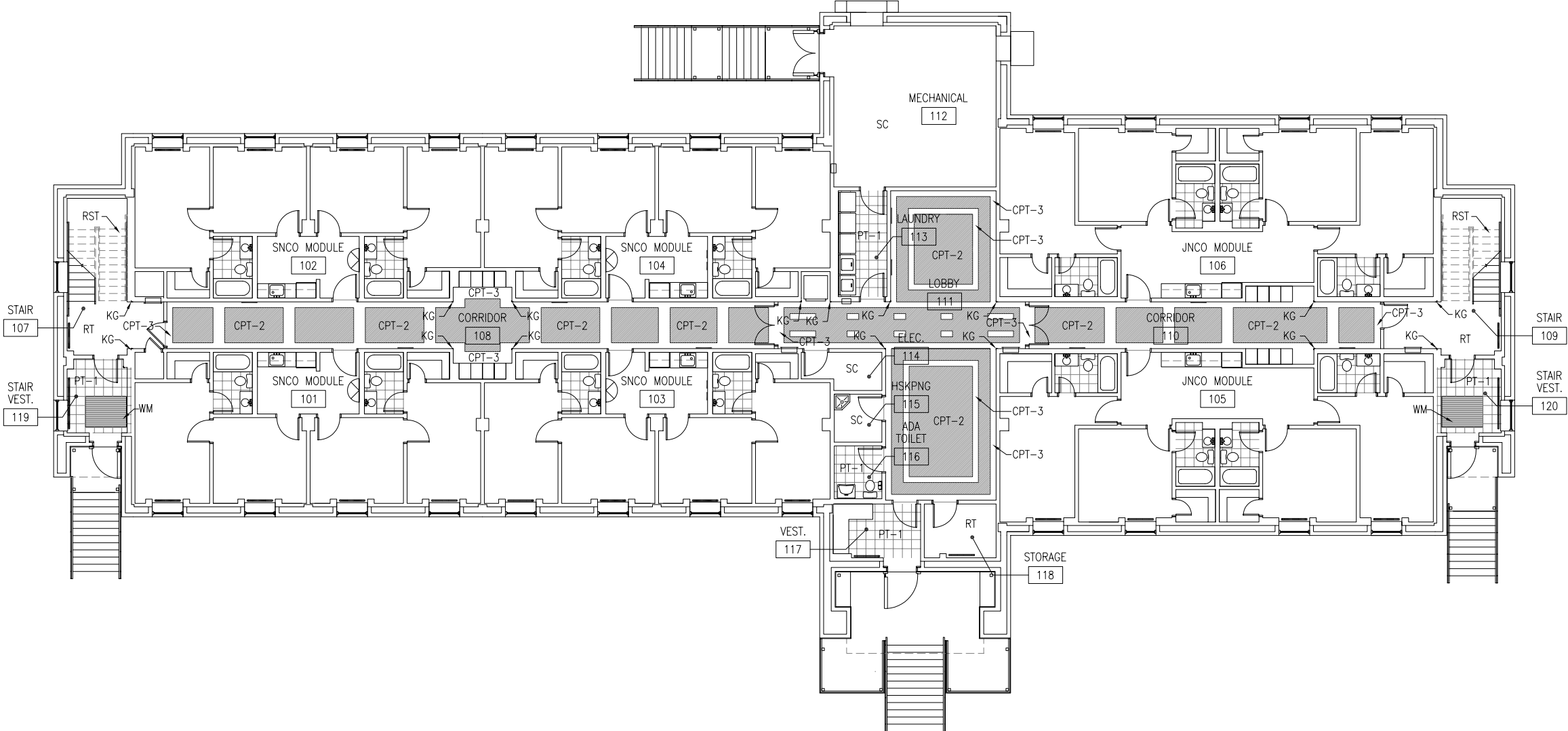


RT

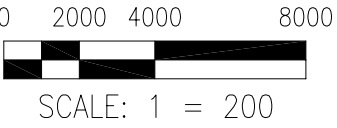


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2.3 FLOOR FINISH PLANS



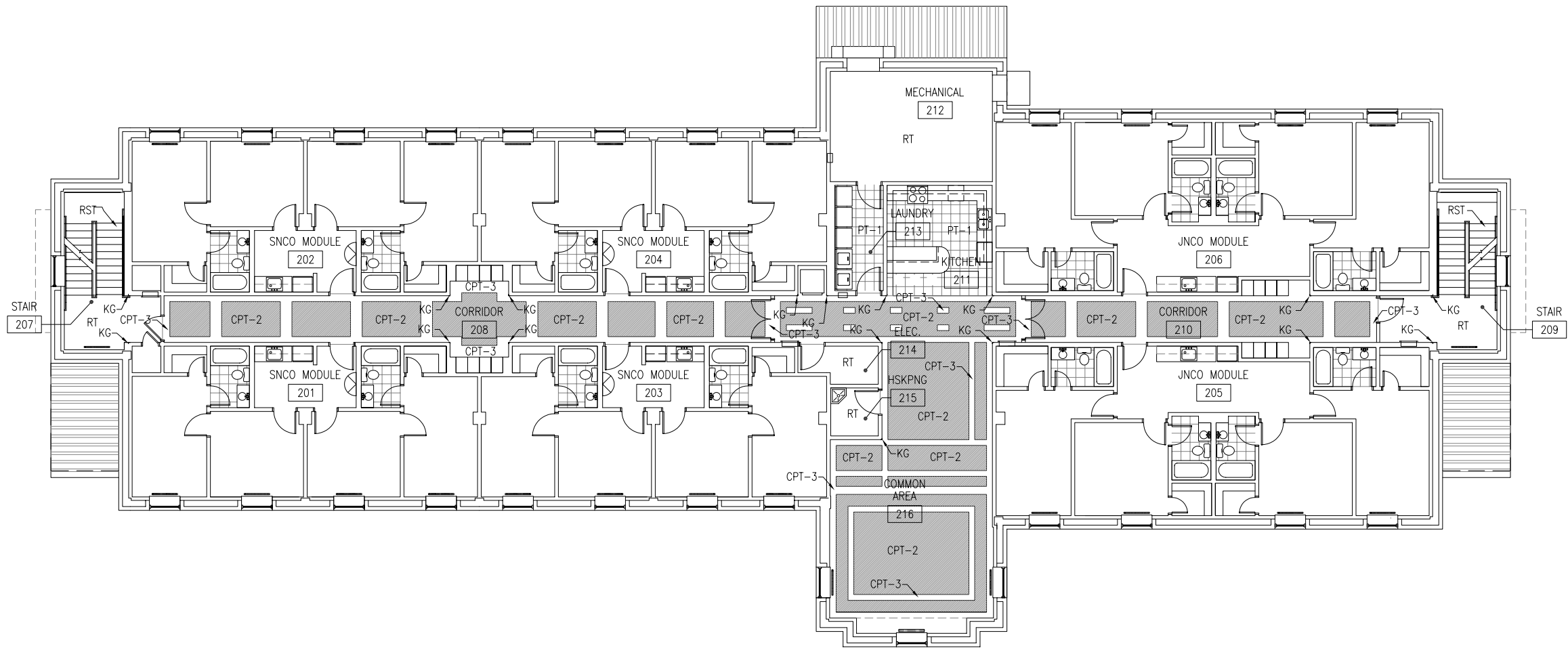
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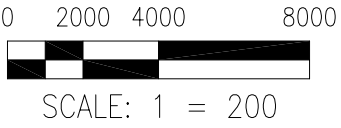
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FLOOR FINISH PLAN – 1ST FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



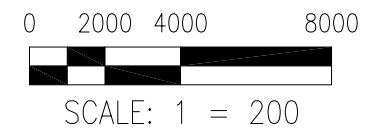
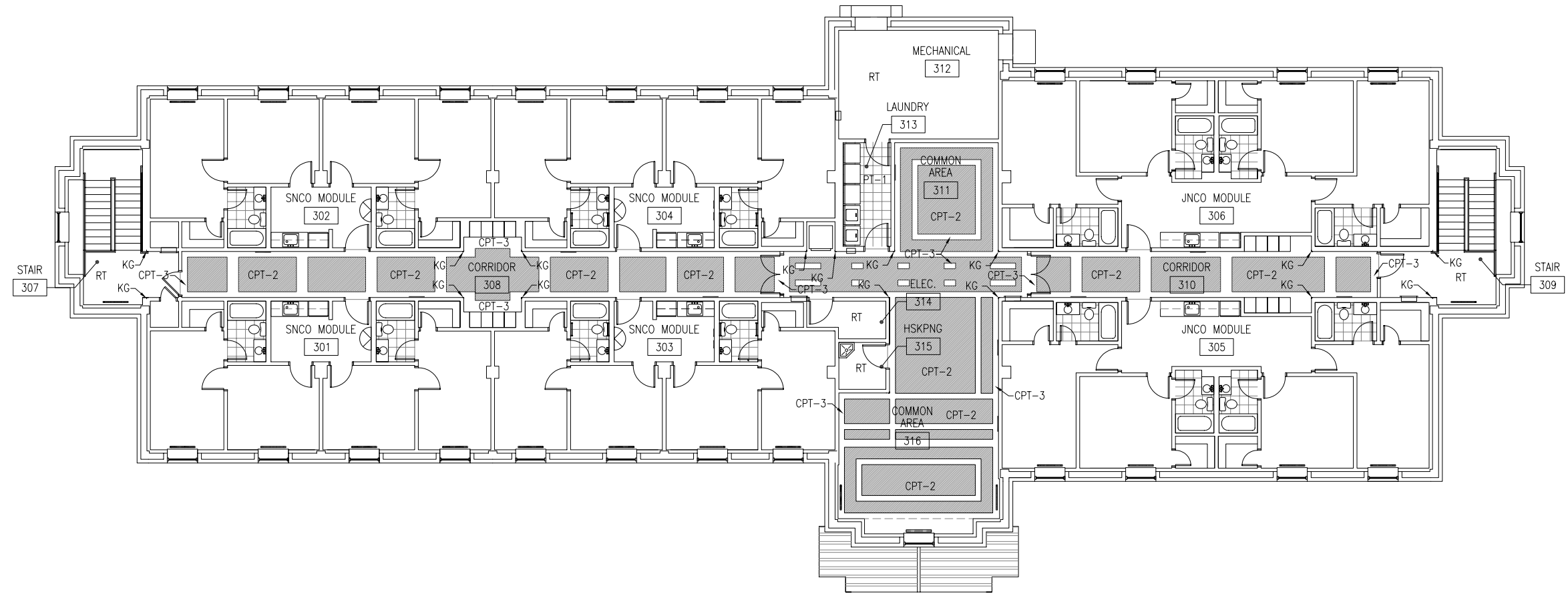
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FLOOR FINISH PLAN – 2ND FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



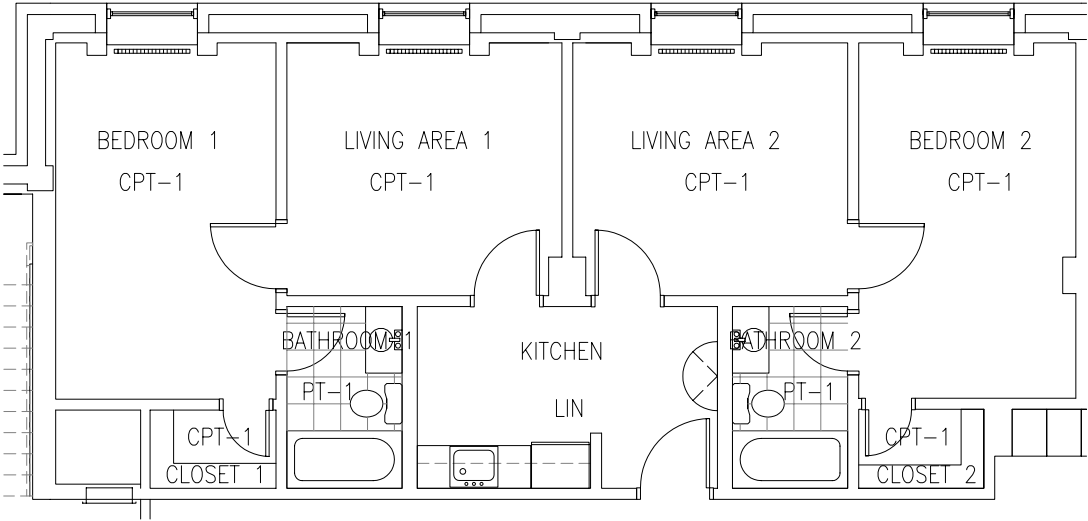
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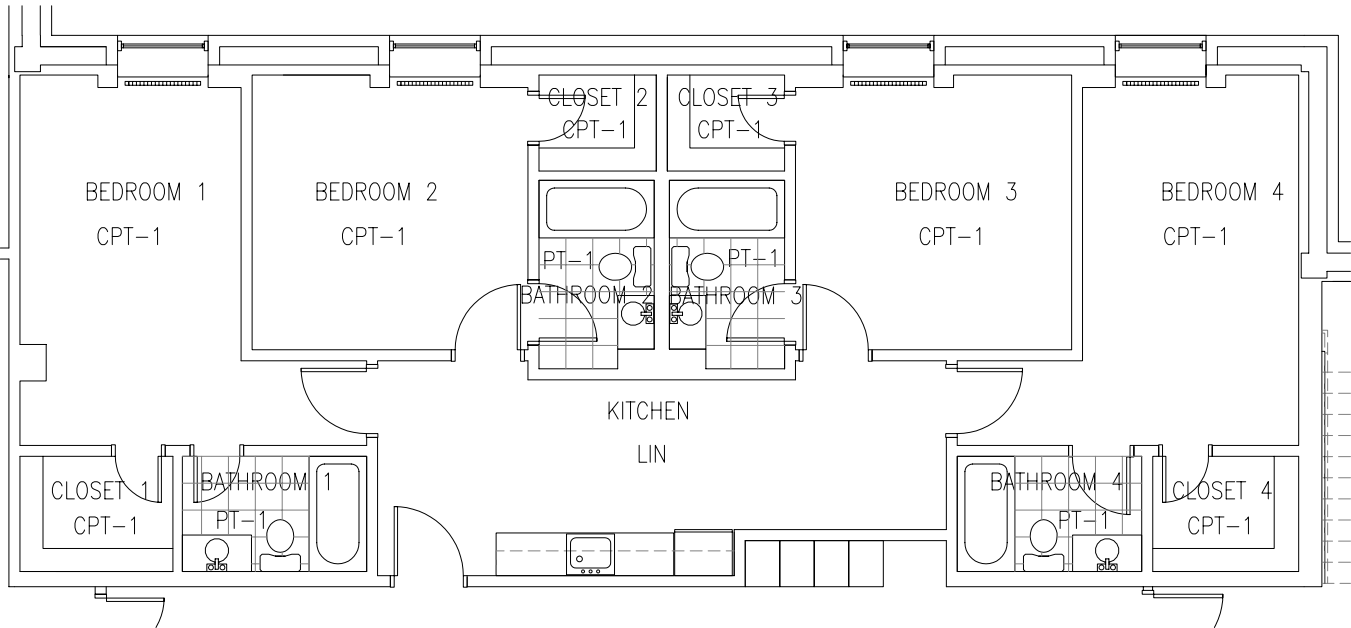
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NOVEMBER 2004

FLOOR FINISH PLAN – 3RD FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



SNCO MODULE (TYPICAL)



JNCO MODULE (TYPICAL)



GENERAL NOTES:
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NOVEMBER 2004

FLOOR FINISH PLAN – SNCO/JNCO MODULES
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

2.4 ROOM FINISH SCHEDULE

ROOM FINISH SCHEDULE							
ROOM	FLOOR		WALLS		CEILING		REMARKS (SEE BELOW)
	MATERIAL	BASE	MATERIAL	FINISH	MATERIAL	FINISH	
FIRST FLOOR							
107	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
108	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
109	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
110	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
111	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT / GWB	P-1	1, 2, 8, 11
112	SC	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
113	PT-1	PT-2	GWB	WC-2 / P-1	GWB	P-1	4, 7, 12
114	SC	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
115	SC	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7, 12
116	PT-1	PT-2	M.R. GWB	WC-2 / P-3	GWB	P-1	4, 7, 12
117	PT-1	PT-2	GWB	WC-2 / P-3	GWB	P-2	4, 7
118	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	6, 7
119	PT-1	PT-2	GWB	WC-2 / P-3	GWB	P-2	4, 7, 12
120	PT-1	PT-2	GWB	WC-2 / P-3	GWB	P-2	4, 7, 12
SECOND FLOOR							
207	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
208	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
209	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
210	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
211	CPT-2 / CPT-3	RB-3	M.R. GWB	WC-1	ACT / GWB	P-1	1, 2, 8, 9, 11
212	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
213	PT-1	PT-2	GWB	WC-2 / P-1	GWB	P-1	4, 7, 12
214	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
215	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7, 12
216	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT / GWB	P-1	1, 2, 8, 11
THIRD FLOOR							
307	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
308	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
309	RT / RST	RB-1	GWB	WC-2 / P-3	GWB	P-2	2, 5, 7
310	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT		1, 2, 8, 11
311	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT / GWB	P-1	1, 2, 8, 11
312	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
313	PT-1	PT-2	GWB	WC-2 / P-1	GWB	P-1	4, 7, 12
314	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7
315	RT	RB-1	GWB	WC-2 / P-1	GWB	P-1	2, 6, 7, 12
316	CPT-2 / CPT-3	RB-3	GWB	WC-1	ACT / GWB	P-1	1, 2, 8, 11

REMARKS

1.	457mm x 457mm CARPET TILE
2.	RUBBER WALL BASE
3.	SHEET LINOLEUM IN SNCO AND JNCO MODULE KITCHENS.
4.	PORCELAIN TILE FLOOR AND BASE IN SNCO AND JNCO MODULE BATHROOMS, LAUNDRY ROOMS, PUBLIC BATHROOM, COMMON AREA KITCHEN
5.	RUBBER STAIR TREAD WITH GRIT TAPE FOR TRACTION, HAMMERED FINISH ON FLOOR, TREAD AND RISER.
6.	SEALED CONCRETE FLOORS IN SERVICE/SUPPORT AREAS ON FIRST FLOOR; RUBBER TILE FLOOR ON SECOND AND THIRD FLOOR.
7.	ALL WALL SURFACES, EXCLUDING THE CORRIDORS AND COMMON AREAS, WILL BE COVERED WITH A FIBERGLASS MESH WALLCOVERING AND PAINTED OVER TO PROVIDE TEXTURE.
8.	VINYL WALLCOVERING TO BE USED IN THE COMMON AREAS AND CORRIDORS.
9.	PORCELAIN WALL TILE IN THE KITCHENS WILL RUN FROM THE TOP OF THE BACKSPASH TO THE BASE OF THE CABINETS.
10.	PORCELAIN WALL TILE IN THE BATHROOMS WILL BE FULL HEIGHT AROUND THE BATHTUB/SHOWER AREA.
11.	ACOUSTICAL TILE CEILINGS.
12.	WATER PROOFING MEMBRANE IN FLOORING SYSTEM.

ABBREVIATIONS

CPT - CARPET TILE
LIN - LINOLEUM (SHEET)
PT - PORCELAIN TILE FLOOR, BASE, WALL
RB - RUBBER BASE
RST - RUBBER STAIR TREAD AND RISER
RT - RESILIENT RUBBER TILE FLOOR
SC - SEALED CONCRETE
GWB - GYPSUM WALL BOARD
M.R. GWB - MOISTURE RESISTANT GYPSUM WALL BOARD
WC - WALL COVERING
P - PAINT
ACT - SUSPENDED ACOUSTICAL CEILING TILE

ROOM FINISH SCHEDULE

ROOM	FLOOR		WALLS		CEILING		REMARKS (SEE BELOW)
	MATERIAL	BASE	MATERIAL	FINISH	MATERIAL	FINISH	
SNCO MODULES (101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304)							
KITCHEN	LIN	RB-2	M.R. GWB	WC-2 / P-4 / PT-4	GWB	P-2	2, 3, 7, 9, 12
BEDROOM 1	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 1	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 1	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12
LIVING ROOM 1	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BEDROOM 2	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 2	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 2	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12
LIVING ROOM 2	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
JNCO MODULES (105, 106, 205, 206, 305, 306)							
KITCHEN	LIN	RB-2	M.R. GWB	WC-2 / P-4 / PT-4	GWB	P-2	2, 3, 7, 9, 12
BEDROOM 1	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 1	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 1	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12
BEDROOM 2	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 2	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 2	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12
BEDROOM 3	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 3	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 3	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12
BEDROOM 4	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
CLOSET 4	CPT-1	RB-2	GWB	WC-2 / P-3	GWB	P-2	1, 2, 7
BATHROOM 4	PT-1	PT-2	M.R. GWB	WC-2 / P-4 / PT-4 / P-5	GWB	P-2	4, 7, 10, 12

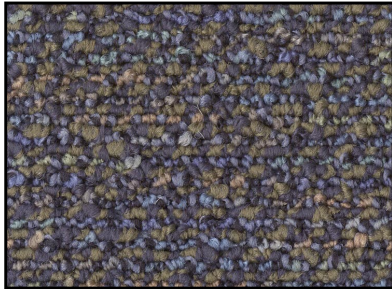
REMARKS

1.	457mm x 457mm CARPET TILE
2.	RUBBER WALL BASE
3.	SHEET LINOLEUM IN SNCO AND JNCO MODULE KITCHENS.
4.	PORCELAIN TILE FLOOR AND BASE IN SNCO AND JNCO MODULE BATHROOMS, LAUNDRY ROOMS, PUBLIC BATHROOM, COMMON AREA KITCHEN
5.	RUBBER STAIR TREAD WITH GRIT TAPE FOR TRACTION, HAMMERED FINISH ON FLOOR, TREAD AND RISER.
6.	SEALED CONCRETE FLOORS IN SERVICE/SUPPORT AREAS ON FIRST FLOOR; RUBBER TILE FLOOR ON SECOND AND THIRD FLOOR.
7.	ALL WALL SURFACES, EXCLUDING THE CORRIDORS AND COMMON AREAS, WILL BE COVERED WITH A FIBERGLASS MESH WALLCOVERING AND PAINTED OVER TO PROVIDE TEXTURE.
8.	VINYL WALLCOVERING TO BE USED IN THE COMMON AREAS AND CORRIDORS.
9.	PORCELAIN WALL TILE IN THE KITCHENS WILL RUN FROM THE TOP OF THE BACKSPASH TO THE BASE OF THE CABINETS.
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ABBREVIATIONS

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M.R. GWB - MOISTURE RESISTANT GYPSUM WALL BOARD
WC - WALL COVERING
P - PAINT
ACT - SUSPENDED ACOUSTICAL CEILING TILE

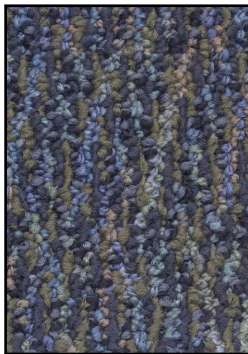
2.5 MATERIAL DESCRIPTIONS



ITEM NO.: CPT-1
MANUFACTURER: Collins & Aikman
STYLE NO.: Soma
COLOR: Dijon 65009



ITEM NO.: LIN
MANUFACTURER: Tarkett Sommer
STYLE NO.: Toscano
COLOR: 5504



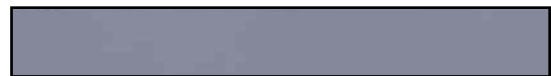
ITEM NO.: CPT-2
MANUFACTURER: Collins & Aikman
STYLE NO.: Synapse
COLOR: Dijon 71009



ITEM NO.: PT-1
MANUFACTURER: Daltile
STYLE NO.: Portenza 14" x 14"
COLOR: PZ05 Verde Lago



ITEM NO.: CPT-3
MANUFACTURER: Collins & Aikman
STYLE NO.: Timeless
COLOR: Charcoal 39825



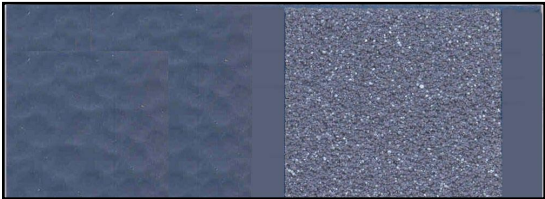
ITEM NO.: FG
MANUFACTURER: Custom Building Products
STYLE NO.: 100% Epoxy Grout
COLOR: #335 Winter Gray



ITEM NO.: RT
MANUFACTURER: Johnsonite
STYLE NO.: Hammered Roundel Tile (HRT)
COLOR: Blue Lagoon 92



ITEM NO.: RB-1
MANUFACTURER: Johnsonite
STYLE NO.: 4" DC Rubber Base
COLOR: Blue Lagoon 92



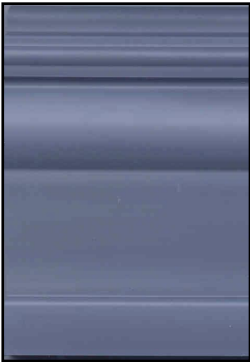
ITEM NO.: RST
MANUFACTURER: Johnsonite
STYLE NO.: Roundel Hammered Tread Riser w/ Grit Tape (VIHTRSPS)
COLOR: Blue Lagoon 92



ITEM NO.: RB-2
MANUFACTURER: Roppe
STYLE NO.: Visuelle Wall Base
COLOR: P139 Deep Navy



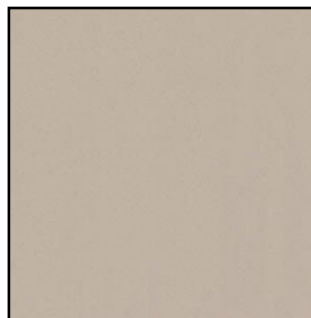
ITEM NO.: WM
MANUFACTURER: The Matworks
STYLE NO.: Diamond Mat
COLOR: Bank Gray



ITEM NO.: RB-3
MANUFACTURER: Roppe
STYLE NO.: Visuelle Wall Base
COLOR: P177 Steel Blue



ITEM NO.: RB-4
 MANUFACTURER: Roppe
 STYLE NO.: Visuelle Wall Base
 COLOR: 198 Ivory



ITEM NO.: PT-4
 MANUFACTURER: Daltile
 STYLE NO.: Porcelato 8" x 8"
 COLOR: CD13 Grigio



ITEM NO.: PT-2
 MANUFACTURER: Daltile
 STYLE NO.: Portenza S-43G9
 COLOR: PZ05 Verde Lago



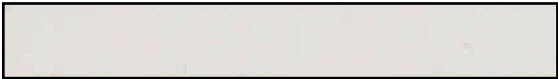
ITEM NO.: PT-5
 MANUFACTURER: Daltile
 STYLE NO.: Porcelato 8" x 8"
 COLOR: CD28 Bianco Ghiccio



ITEM NO.: PT-3
 MANUFACTURER: Daltile
 STYLE NO.: Portenza 3" Mesh
 COLOR: PZ05 Verde Lago



ITEM NO.: WG-1
 MANUFACTURER: Custom Building Products
 STYLE NO.: 100% Epoxy Grout
 COLOR: #386 Oyster Gray



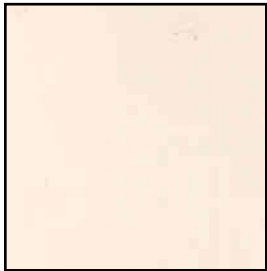
ITEM NO.: WG-2
MANUFACTURER: Custom Building Products
STYLE NO.: 100% Epoxy Grout
COLOR: #382 Bone



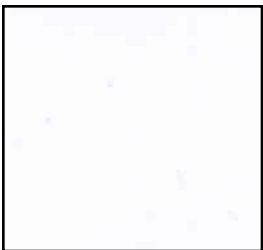
ITEM NO.: P-3
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Alabaster 513-3



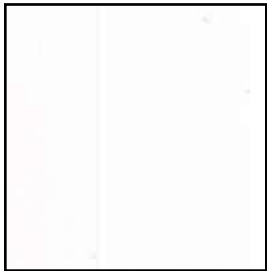
ITEM NO.: P-1
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Ice Castles 552-1



ITEM NO.: P-4
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Brandied Pears 315-2



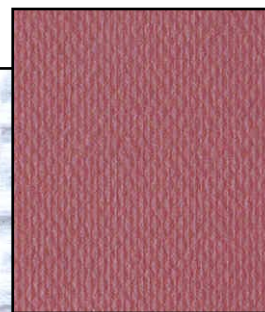
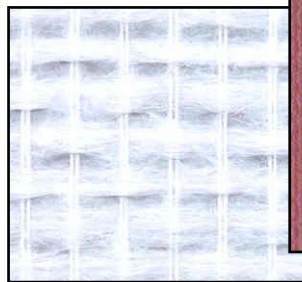
ITEM NO.: P-2
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Pegasus 517-1



ITEM NO.: P-5
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Mother of Pearl 513-1



ITEM NO.: P-6
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Feldspar 554-5



This represents the texture of the painted wallcovering, not the color.

ITEM NO.: WC-2
MANUFACTURER: John Manville Collection
by RJF International
STYLE NO.: Tassoglass G135 N
COLOR: White (painted over)



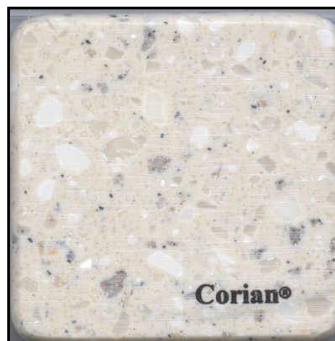
ITEM NO.: P-7
MANUFACTURER: Pittsburgh Paints
STYLE NO.:
COLOR: Sailor's Coat 552-7



ITEM NO.: KG
MANUFACTURER: C/S Acrovyn
STYLE NO.: LG Corner Guards
COLOR: Clear



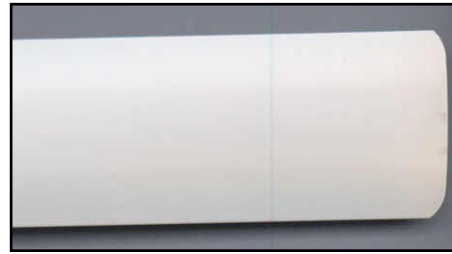
ITEM NO.: WC-1
MANUFACTURER: Koroseal by
RJF International
STYLE NO.: Bagatelle
COLOR: Metal Mist B621-95



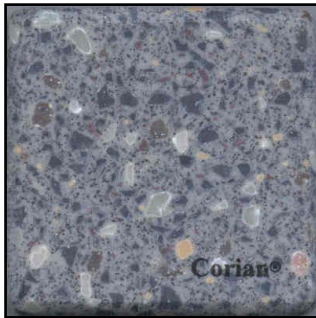
ITEM NO.: SS-1
MANUFACTURER: Dupont
STYLE NO.: Corian Solid Surface
COLOR: Fossil



ITEM NO.: SS-2
 MANUFACTURER: Dupont
 STYLE NO.: Corian Solid Surface
 COLOR: Matterhorn



ITEM NO.: MB-1
 MANUFACTURER: Hunter Douglas
 STYLE NO.: Lightlines 1"
 COLOR: Creme de la Creme



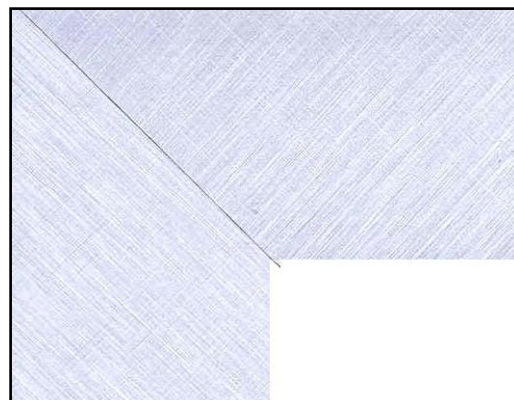
ITEM NO.: SS-3
 MANUFACTURER: Dupont
 STYLE NO.: Corian Solid Surface
 COLOR: Macadam



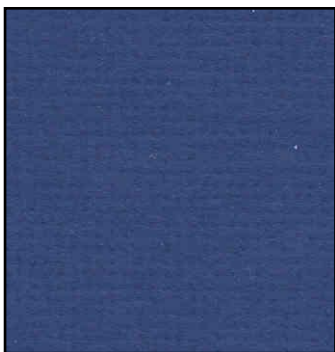
ITEM NO.: MB-2
 MANUFACTURER: Hunter Douglas
 STYLE NO.: Lightlines 1"
 COLOR: Satin Silver



ITEM NO.: ACT
 MANUFACTURER: USG
 STYLE NO.: Mars Clima Plus
 COLOR:



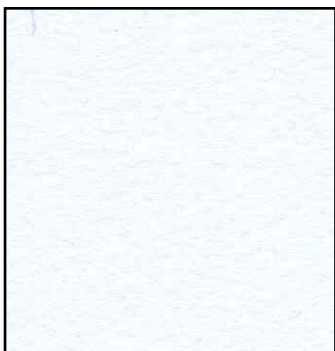
ITEM NO.: F
 MANUFACTURER: IMC Framed Art & Mirrors
 STYLE NO.: DES 28-X12
 COLOR: Brushed Aluminum



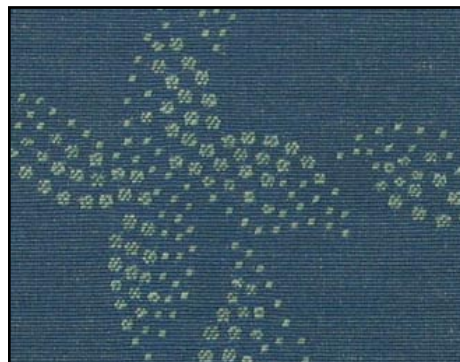
ITEM NO.: M-1
 MANUFACTURER: IMC Framed Art & Mirrors
 STYLE NO.: Berkshires
 COLOR: BX569 Military Blue



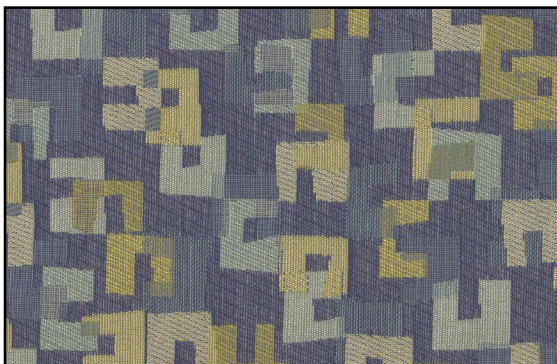
ITEM NO.: UF-2
 MANUFACTURER: International Fabrics, Inc.
 STYLE NO.: Sandy Creek 504
 COLOR: Iris 010



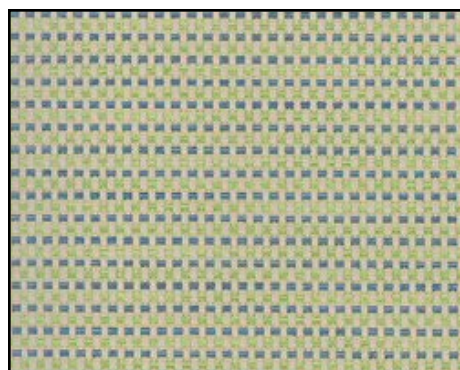
ITEM NO.: M-2
 MANUFACTURER: IMC Framed Art & Mirrors
 STYLE NO.: Berkshires
 COLOR: B130 Silver Mist



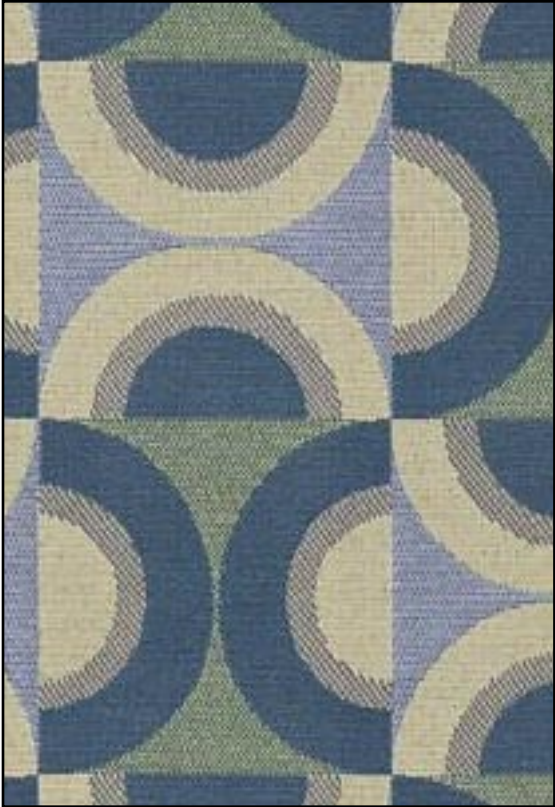
ITEM NO.: UF-3
 MANUFACTURER: Maharam
 STYLE NO.: Skate 462370
 COLOR: 008 Lagoon



ITEM NO.: UF-1
 MANUFACTURER: Pallas Textiles
 STYLE NO.: Mache
 COLOR: Night 29.023.044



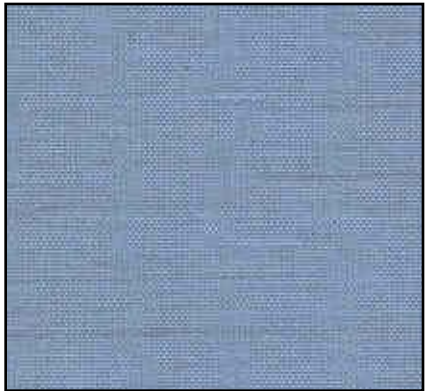
ITEM NO.: UF-4
 MANUFACTURER: Architex International
 STYLE NO.: Dazzle
 COLOR: Kiwi



ITEM NO.: UF-5
MANUFACTURER: Richmond Textiles
STYLE NO.: Horizon
COLOR: #4 Blue



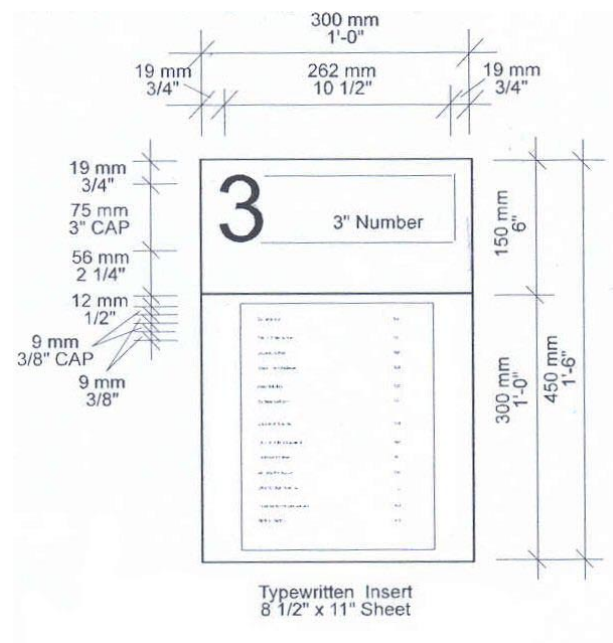
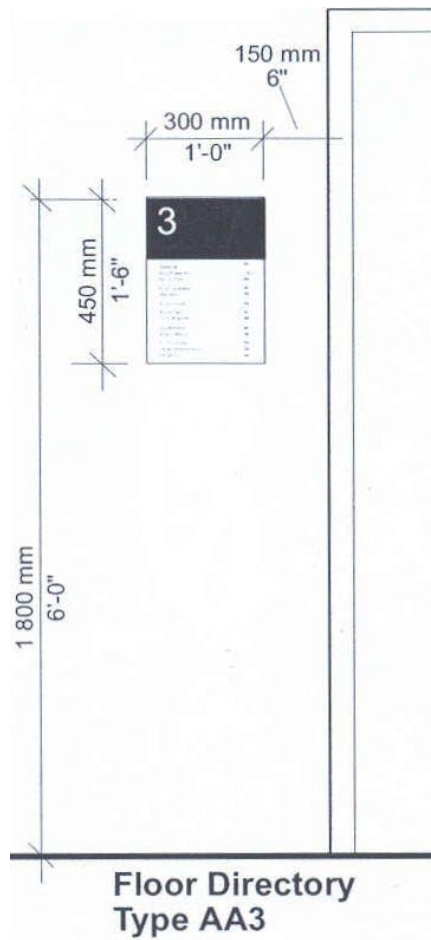
ITEM NO.: UF-7
MANUFACTURER: Vimco
STYLE NO.: Blackout Premiere
BM-623-0
COLOR: Sahel



ITEM NO.: UF-6
MANUFACTURER: Fabricut
STYLE NO.: Exquisite
COLOR: Wedgewood

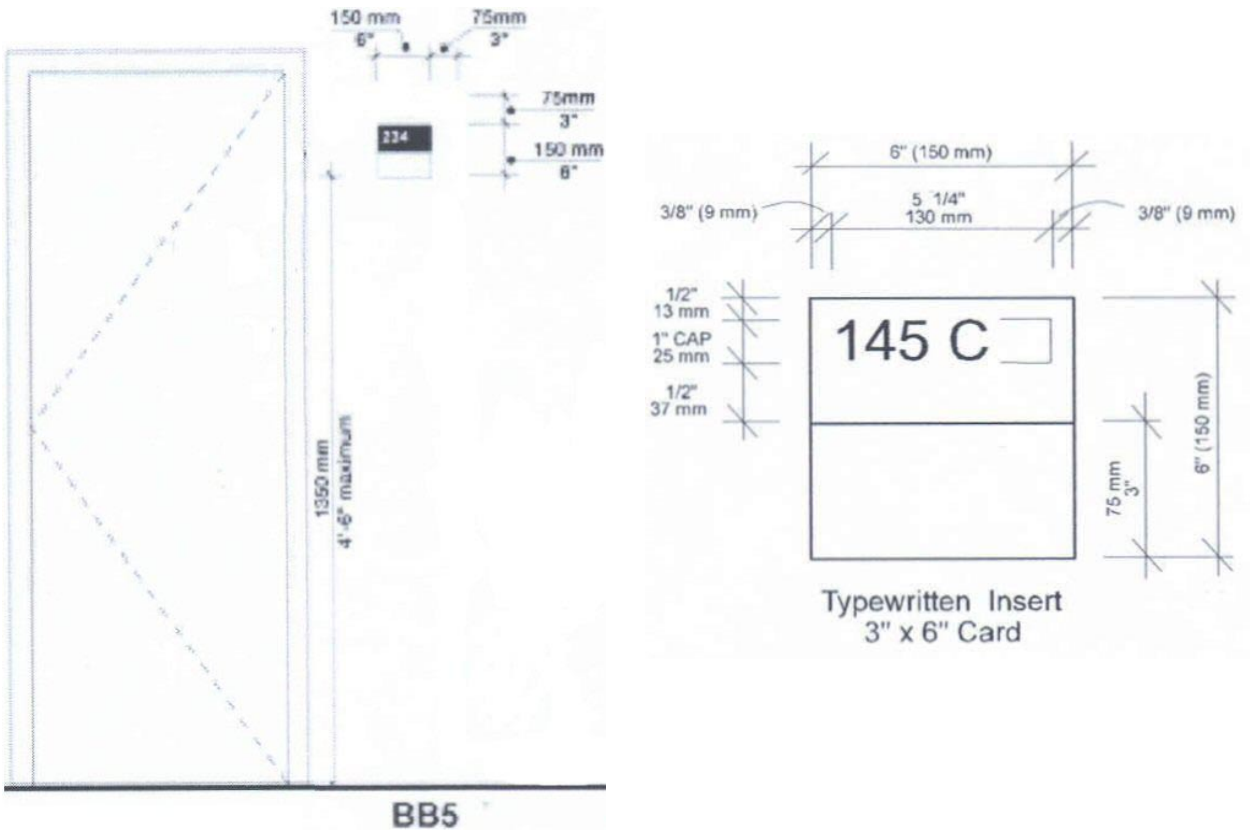
2.6 INTERIOR SIGNAGE BOARDS

2.6.1 DIRECTORY SIGNS

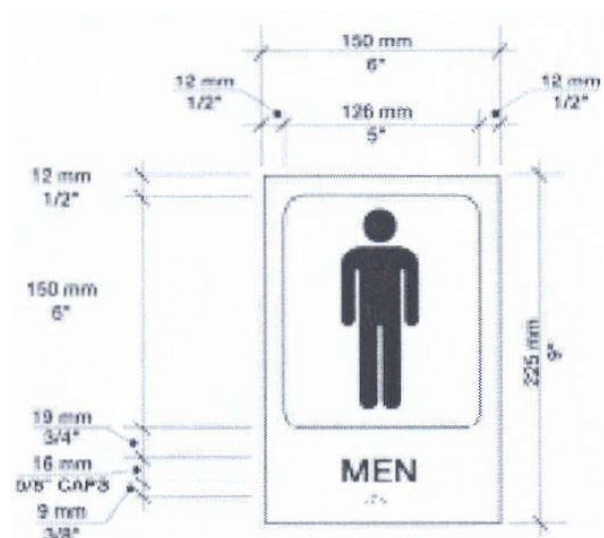
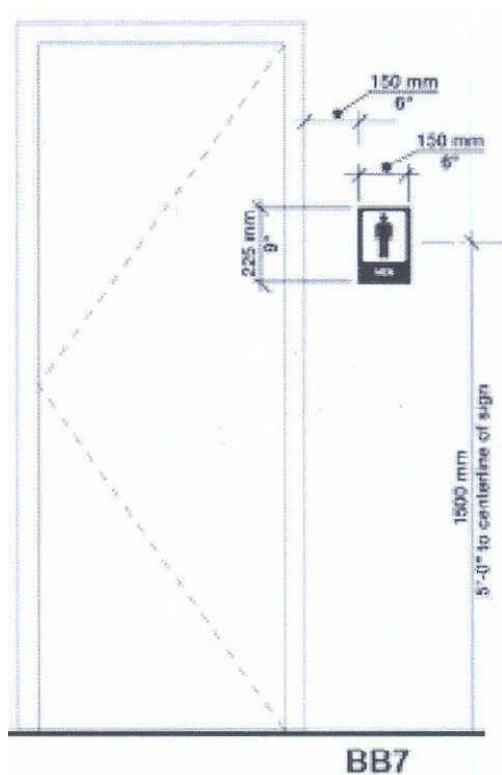


SIGN TYPE:	AA3
CATEGORY:	FLOOR DIRECTORY
DIMENSIONS:	450mm x 300 mm (1'-6" x 1'-0")
LOCATION:	STAIRWELLS - Each floor (see Signage Plan)
HT. FROM FLOOR:	
MANUFACTURER:	
MODEL/STYLE NO.:	Dark Blue background (behind number); White number and bottom plate. Clear protective cover for insert sheet.

2.6.2 IDENTIFICATION SIGNS

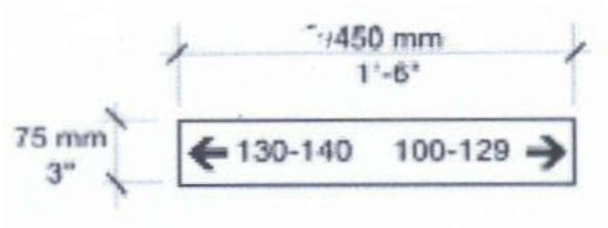
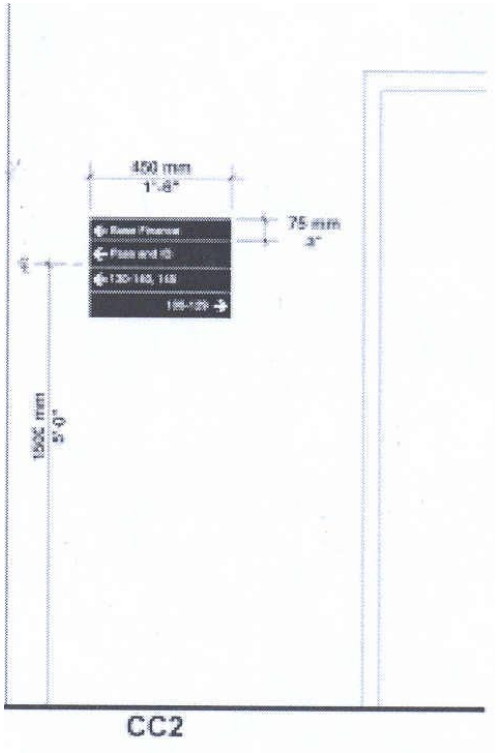


SIGN TYPE:	BB5
CATEGORY:	IDENTIFICATION
DIMENSIONS:	150mm x 150mm (6" x 6")
LOCATION:	SNCO & JNCO MODULES - opposite side from hinge on entrance doors (see Signage Plan)
HT. FROM FLOOR:	1350mm (4'-6")
MANUFACTURER:	
MODEL/STYLE NO.:	Dark Blue background (behind number); White lettering and bottom plate; Removable magnetic "Daysleeper" sign.



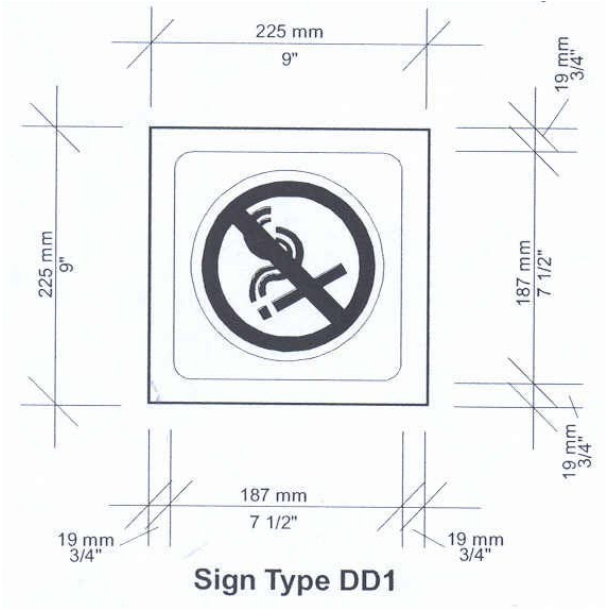
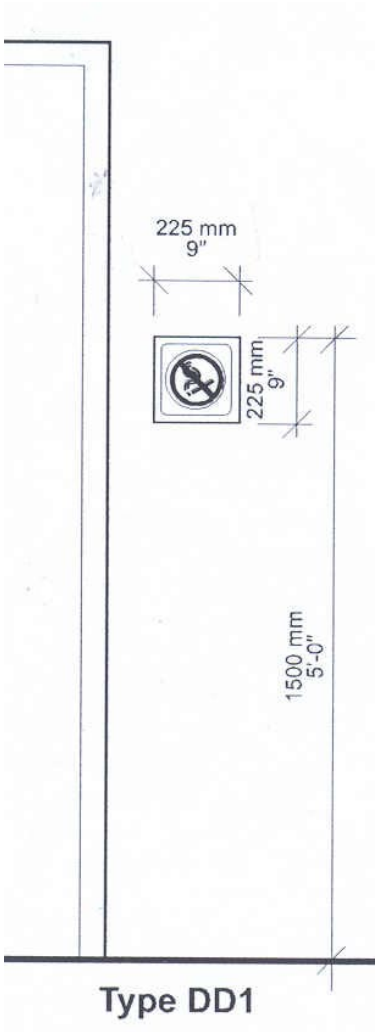
SIGN TYPE:	BB7
CATEGORY:	SERVICE IDENTIFICATION
DIMENSIONS:	225mm x 150mm (9" x 6")
LOCATION:	SERVICE ROOM ENTRANCES - opposite side from hinge (see Signage Plan)
HT. FROM FLOOR:	1500mm (5'-0") to center of sign
MANUFACTURER:	
MODEL/STYLE NO.:	Dark Blue background; Black symbol; White lettering

2.6.3 DIRECTION SIGNS



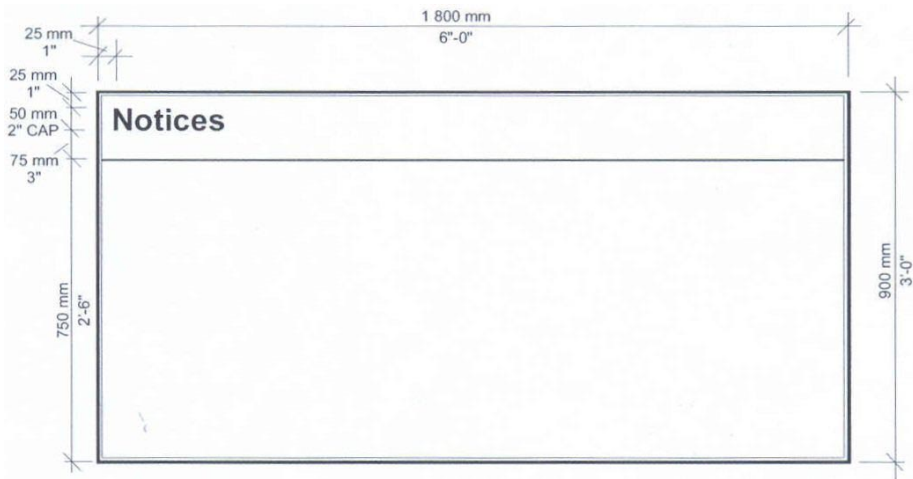
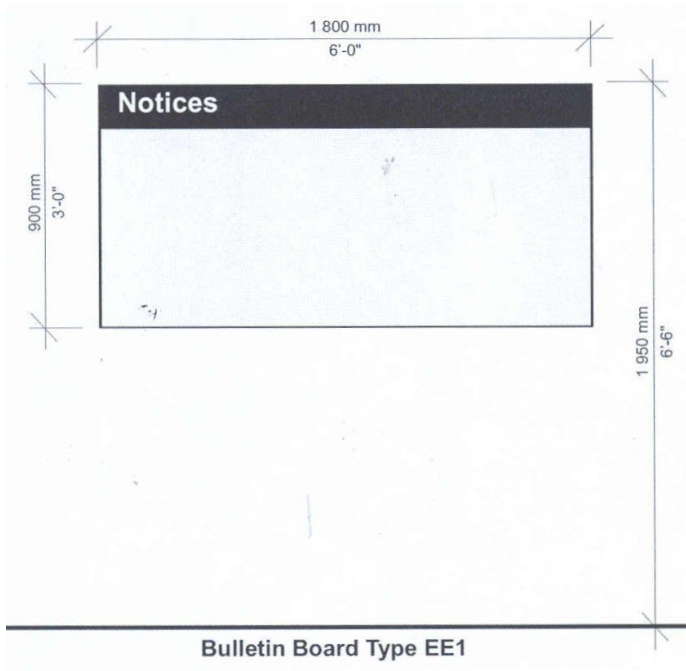
SIGN TYPE:	CC2
CATEGORY:	DIRECTION
DIMENSIONS:	75mm x 450mm (3" x 1'-6")
LOCATION:	COMMON AREAS (see Signage Plan)
HT. FROM FLOOR:	1500mm (5'-0" to center of sign)
MANUFACTURER:	
MODEL/STYLE NO.:	Dark blue background; White lettering.

2.6.4 REGULATIONS SIGNS



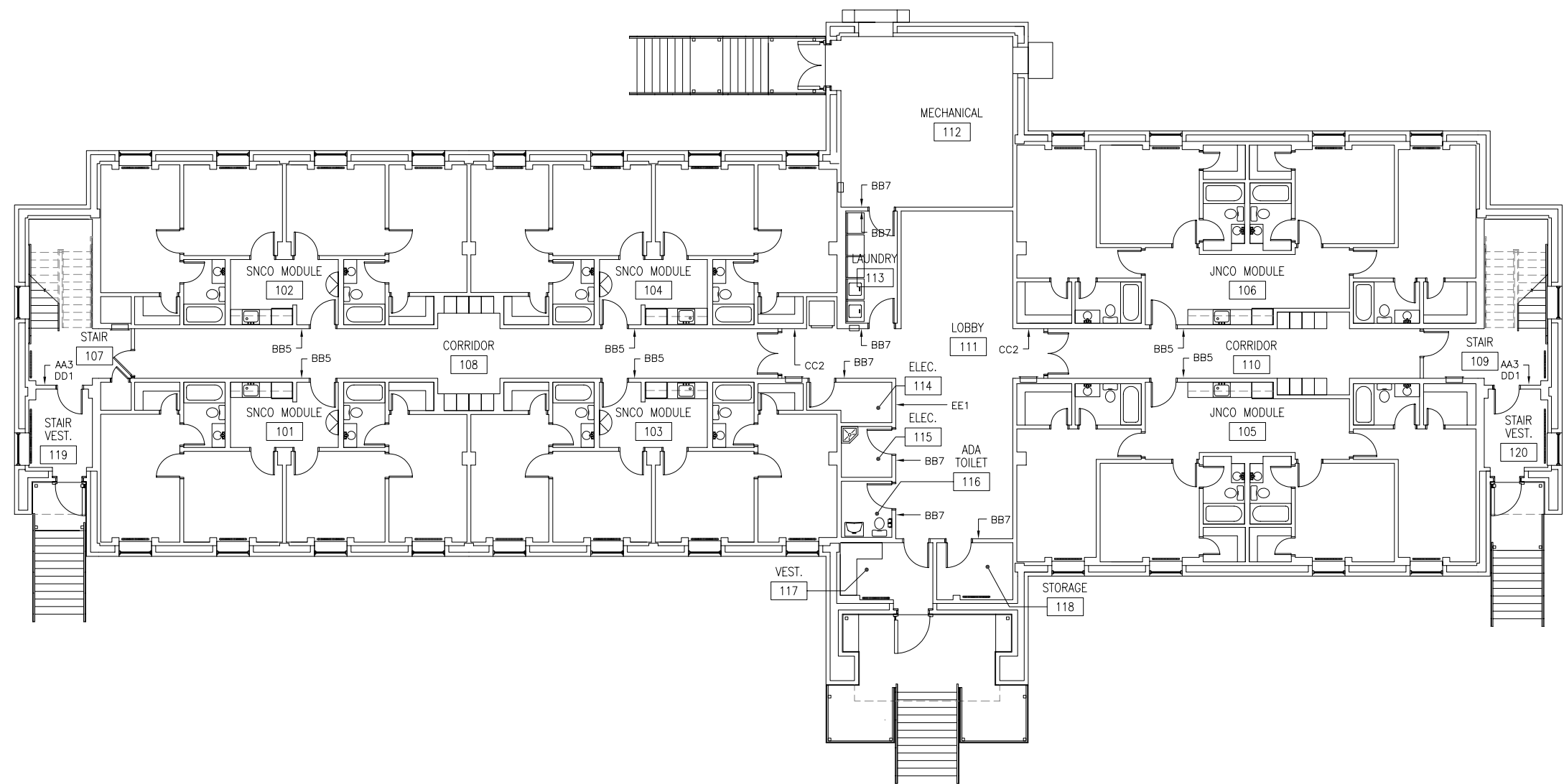
SIGN TYPE:	DD1
CATEGORY:	REGULATION
DIMENSIONS:	225mm x 225mm (9" x 9")
LOCATION:	(see Signage Plan)
HT. FROM FLOOR:	1500mm (5'-0")
MANUFACTURER:	
MODEL/STYLE NO.:	

2.6.5 BULLETIN BOARDS

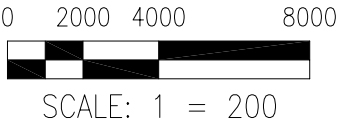


SIGN TYPE:	EE1
CATEGORY:	BULLETIN BOARD/NOTICES
DIMENSIONS:	900mm x 1800mm (3'-0" x 6'-0")
LOCATION:	FIRST FLOOR LOBBY (see Signage Plan)
HT. FROM FLOOR:	1950mm (6'-6") to top of sign
MANUFACTURER:	
MODEL/STYLE NO.:	Dark Blue background; White lettering; cork panel for postings.

2.7 SIGNAGE PLANS



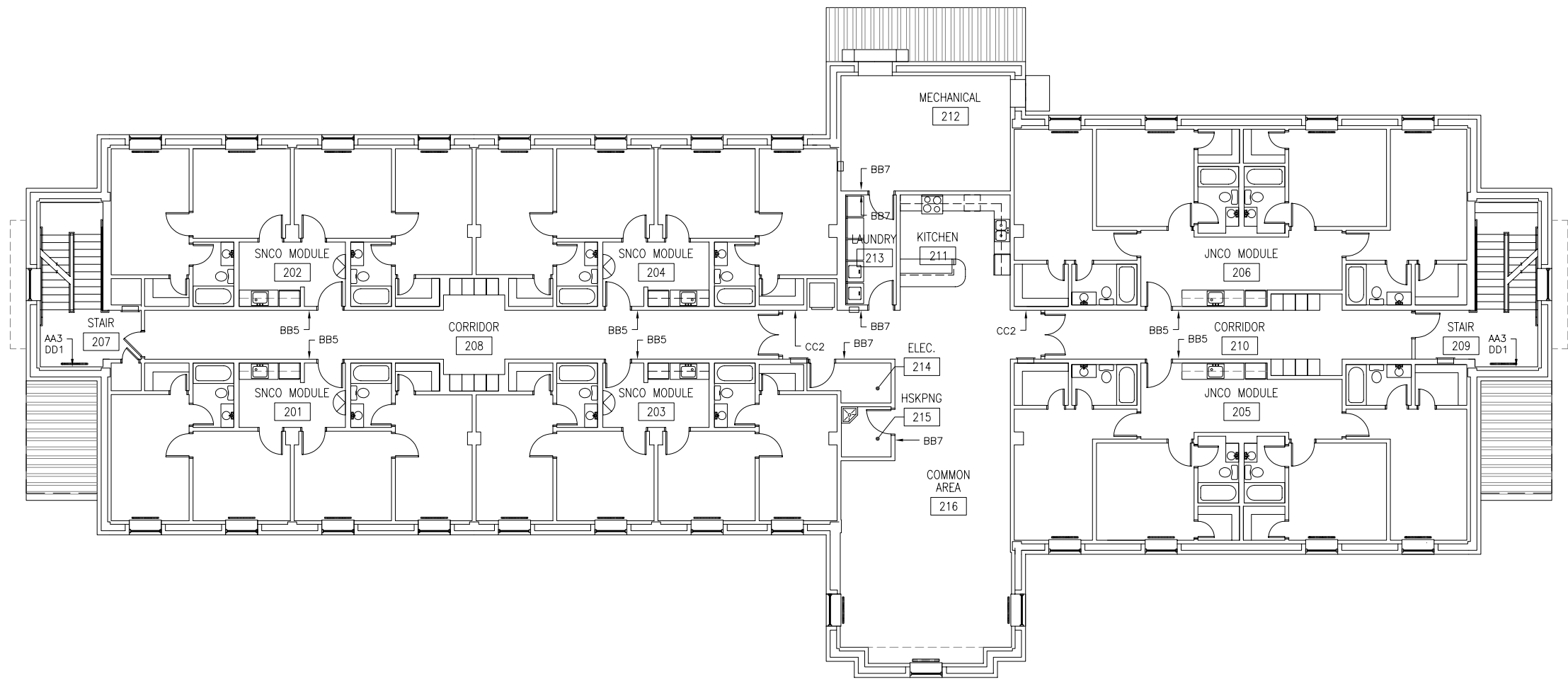
GENERAL NOTES:
REFER TO SECTION 2.6 INTERIOR
SIGNAGE BOARDS FOR SIGNAGE
DESCRIPTIONS.



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SIGNAGE PLAN – 1ST FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



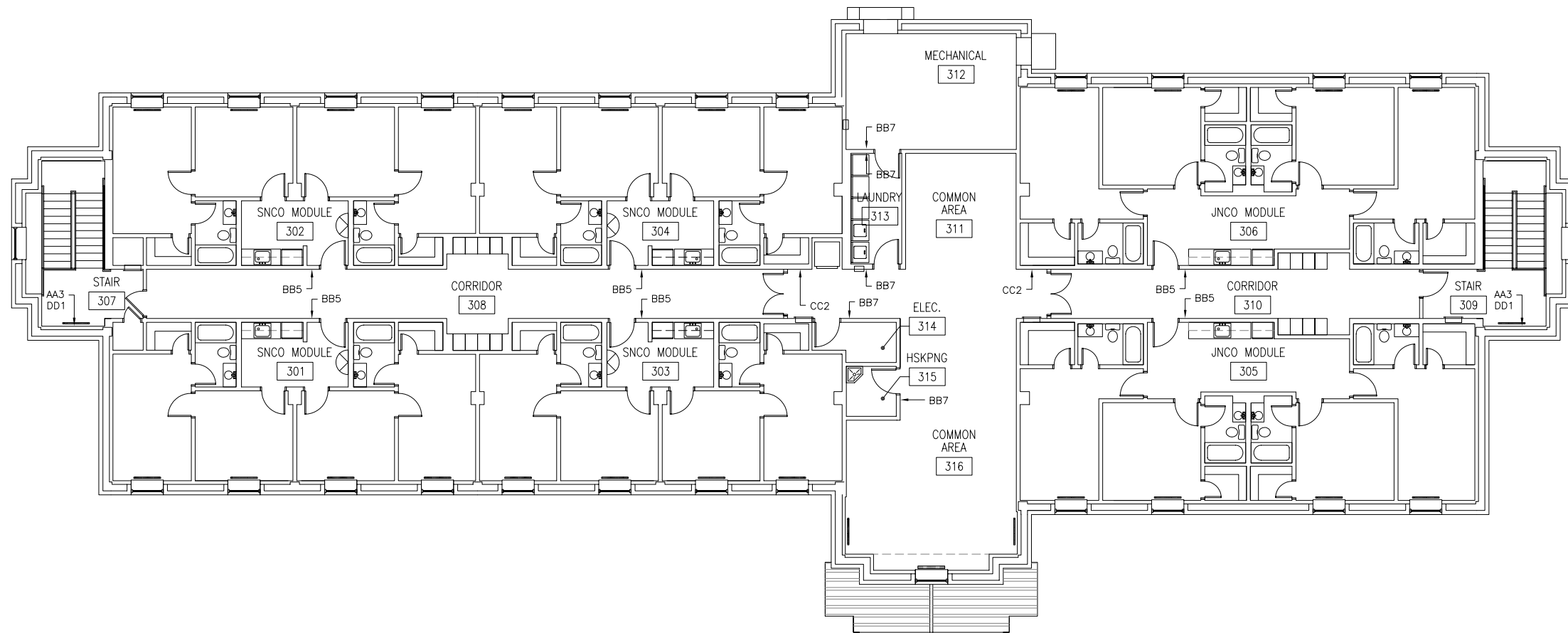
GENERAL NOTES:
REFER TO SECTION 2.6 INTERIOR
SIGNAGE BOARDS FOR SIGNAGE
DESCRIPTIONS.

0 2000 4000 8000
SCALE: 1 = 200

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SIGNAGE PLAN – 2ND FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



GENERAL NOTES:
REFER TO SECTION 2.6 INTERIOR
SIGNAGE BOARDS FOR SIGNAGE
DESCRIPTIONS.

0 2000 4000 8000
SCALE: 1 = 200

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NOVEMBER 2004

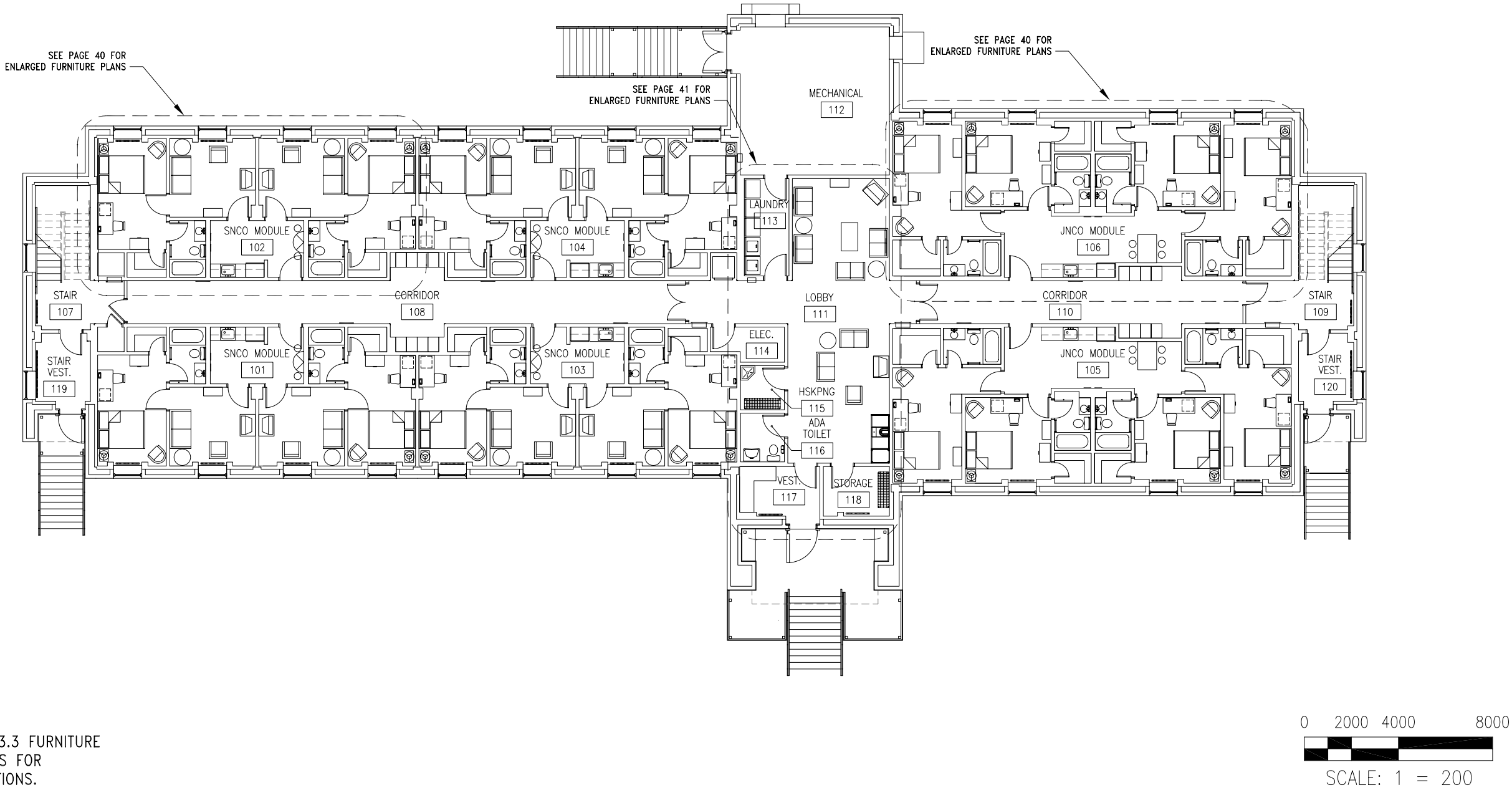
SIGNAGE PLAN – 3RD FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

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CHAPTER 3 – COMPREHENSIVE INTERIOR DESIGN (CID)

3.1 FURNITURE FLOOR PLANS

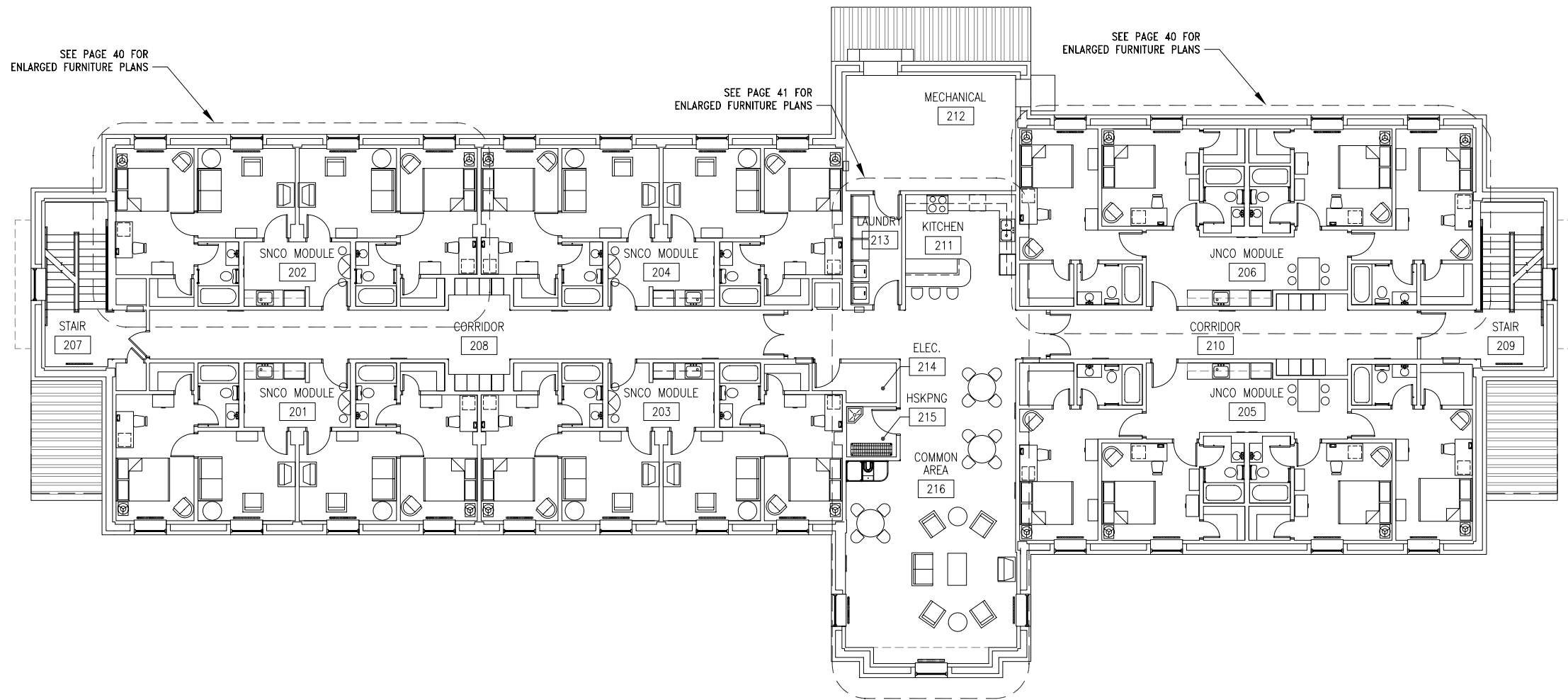


GENERAL NOTES:
REFER TO SECTION 3.3 FURNITURE
ILLUSTRATION SHEETS FOR
FURNITURE DESCRIPTIONS.

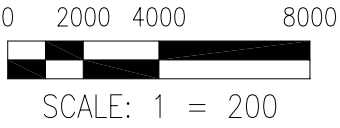
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FURNITURE PLAN – 1ST FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



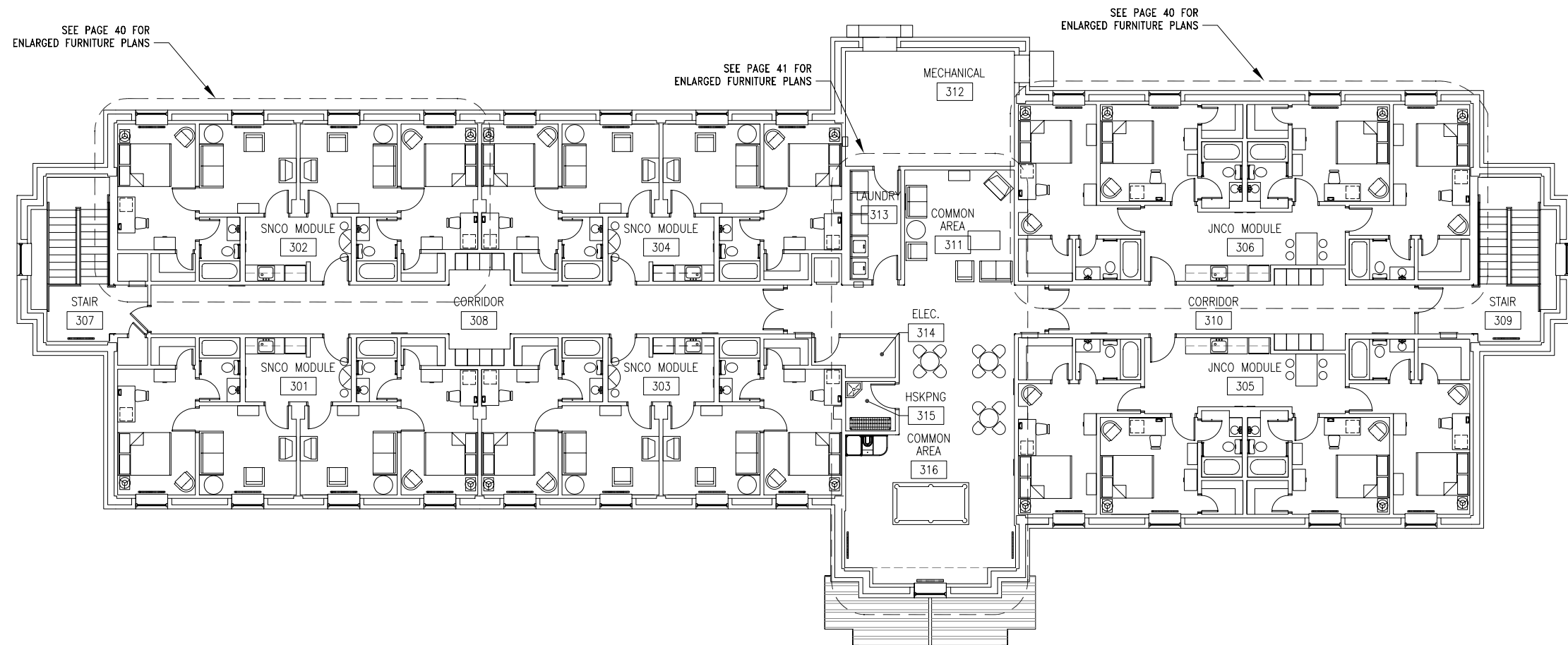
GENERAL NOTES:
REFER TO SECTION 3.3 FURNITURE
ILLUSTRATION SHEETS FOR
FURNITURE DESCRIPTIONS.



FURNITURE PLAN – 2ND FLOOR
SID/CID 100% SUBMISSION

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CONTRACT NO.: F41622-02-D-0009



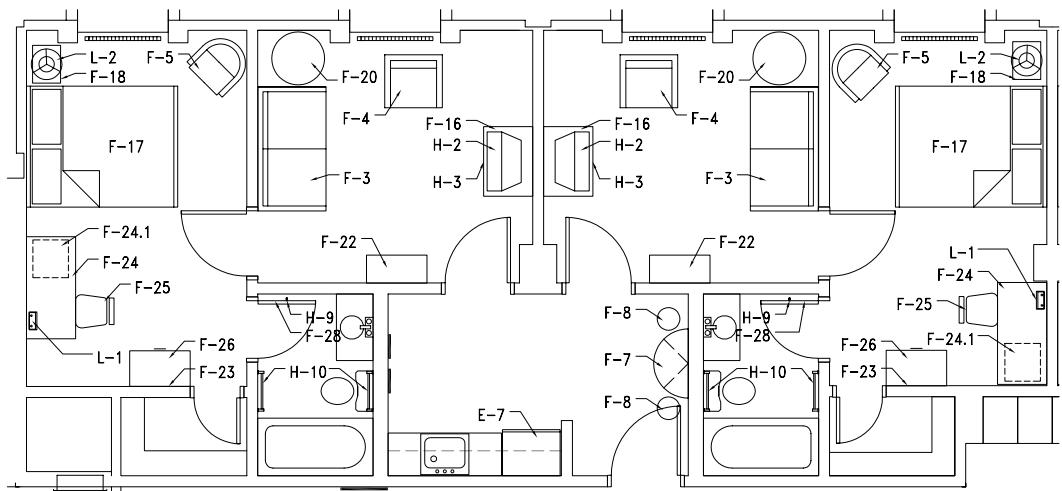
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REFER TO SECTION 3.3 FURNITURE
ILLUSTRATION SHEETS FOR
FURNITURE DESCRIPTIONS.

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SCALE: 1 = 200

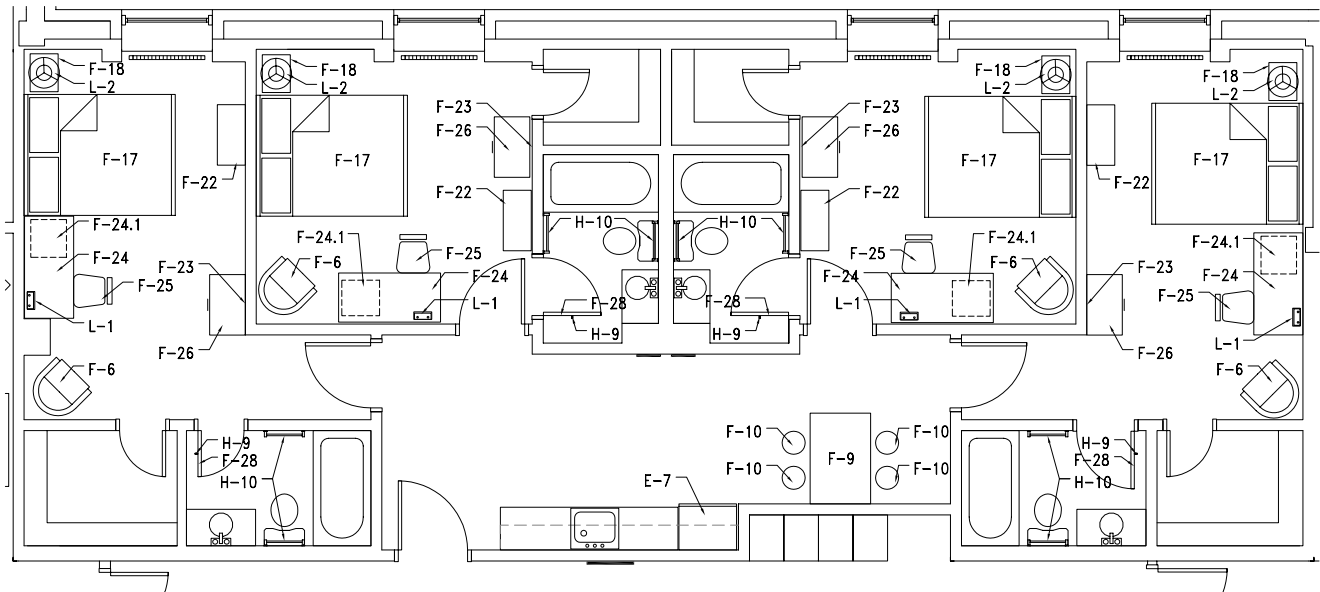
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FURNITURE PLAN – 3RD FLOOR
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

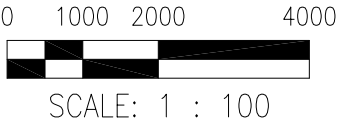


ENLARGED SNCO MODULE - TYPICAL



ENLARGED JNCO MODULE - TYPICAL

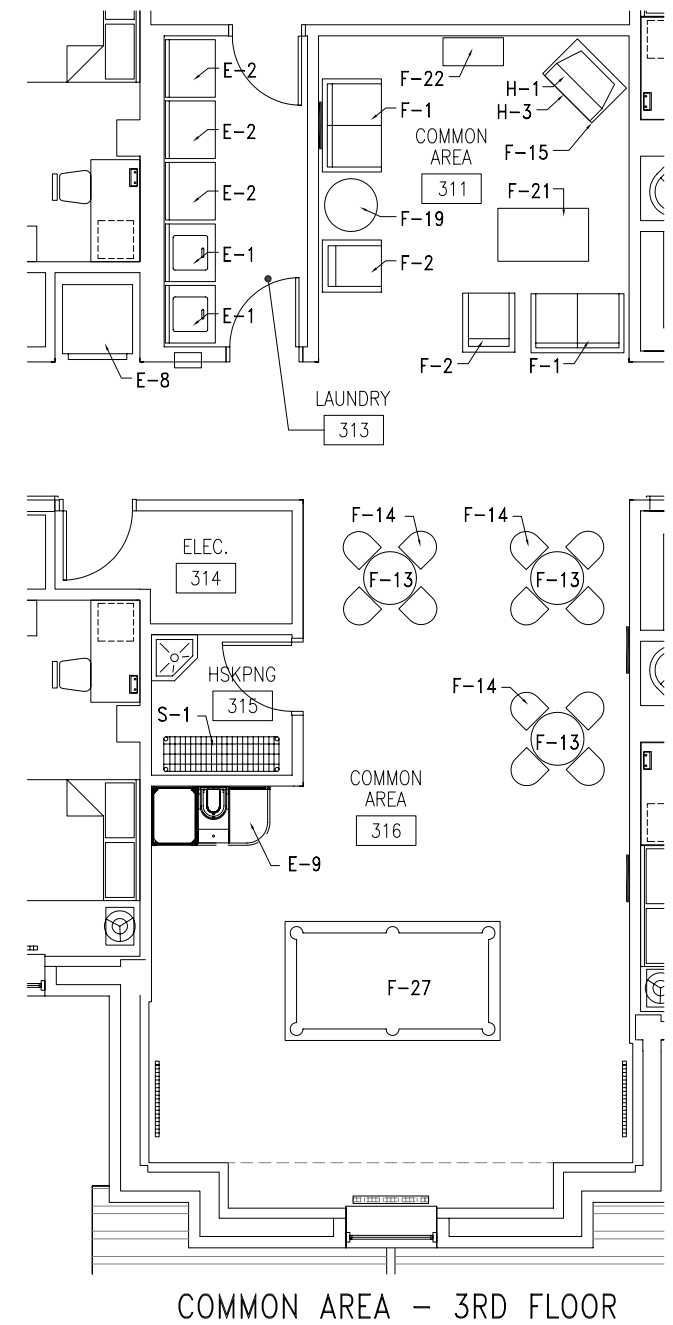
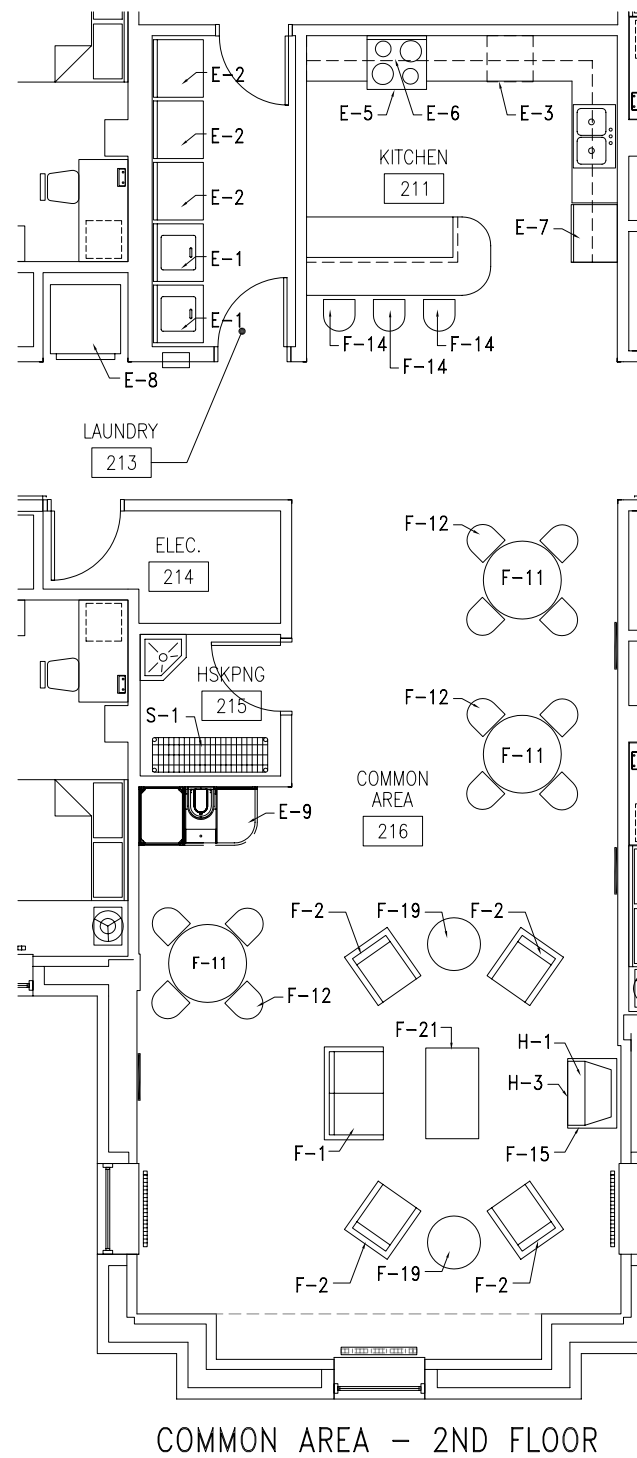
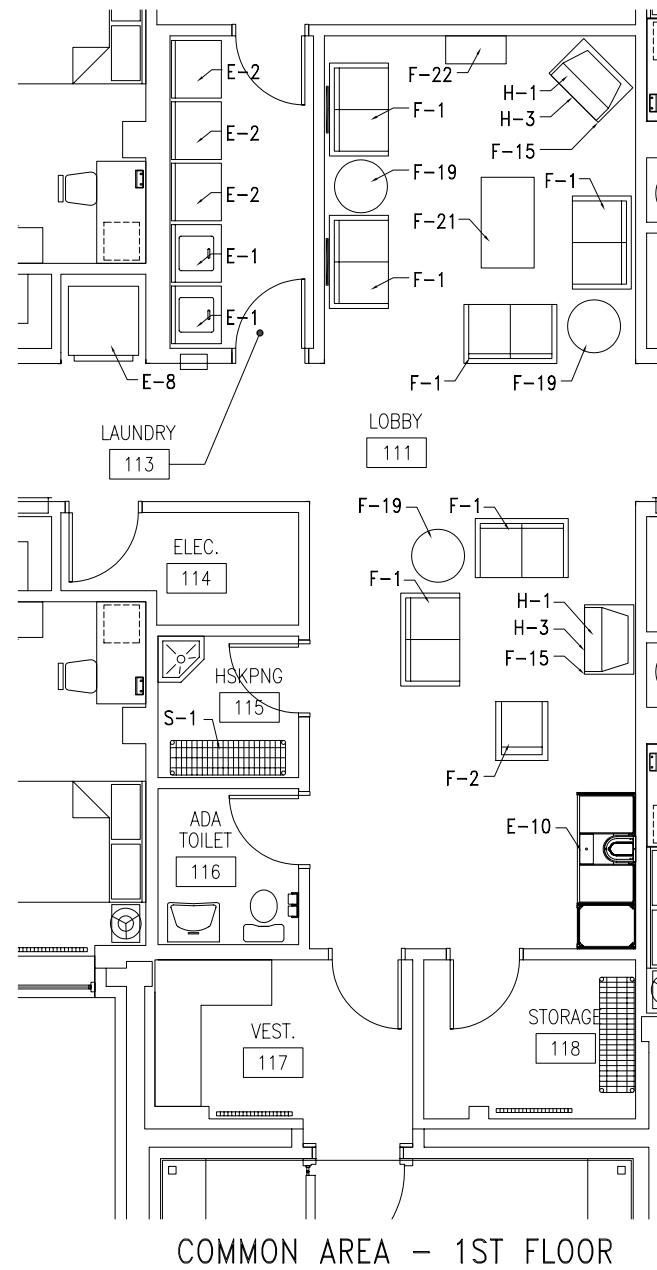
GENERAL NOTES:
REFER TO SECTION 3.5 FURNITURE
ILLUSTRATION SHEETS FOR
FURNITURE DESCRIPTIONS.



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FURNITURE PLAN - ENLARGED SNCO/JNCO MODULE
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



GENERAL NOTES:
REFER TO SECTION 3.5 FURNITURE
ILLUSTRATION SHEETS FOR
FURNITURE DESCRIPTIONS.

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NOVEMBER 2004

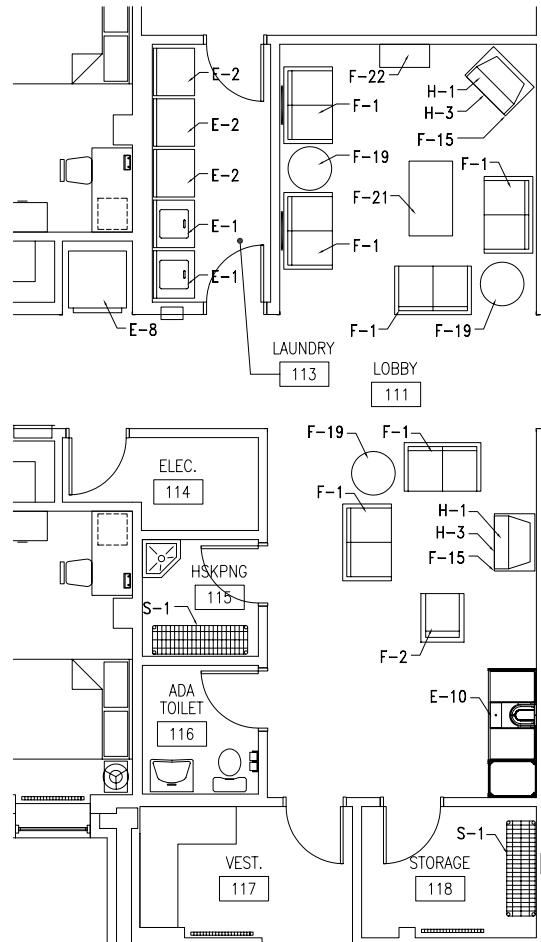
FURNITURE PLAN - ENLARGED COMMON AREAS
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

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3.2 FURNITURE PLACEMENT PLANS

3.2.1 COMMON AREAS



0 1000 2000 4000



SCALE: 1 : 100

ROOM: COMMON AREA - 1ST FLOOR

ITEM NUMBER	DESCRIPTION	QUANTITY
F-1	SOFA	6
F-2	SIDE CHAIR	1
F-15	ENTERTAINMENT CABINET	2
F-19	END TABLE	4
F-21	COFFEE TABLE	1
F-22	BOOKCASE	1
E-1	EQUIPMENT - WASHER	2
E-2	EQUIPMENT - DRYER	3
E-8	EQUIPMENT - VENDING MACHINE	1
E-10	SMOKE FREE SYSTEM	1
S-1	STORAGE SHELF	2
H-1	32" TELEVISION	2
H-3	DVD PLAYER	2

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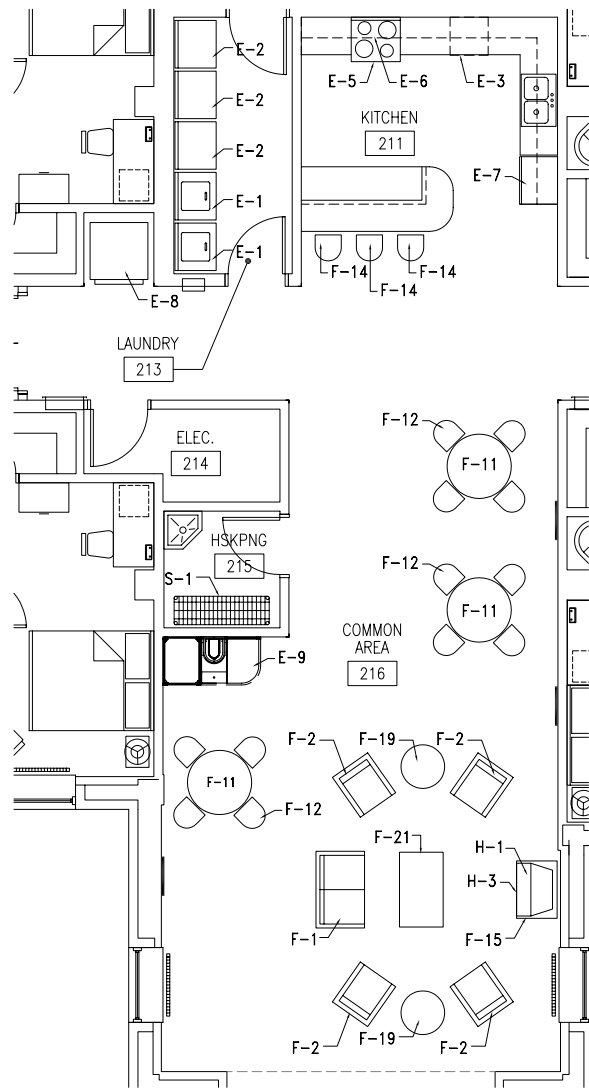
FURNITURE PLACEMENT PLAN

SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY

THULE AB, GREENLAND

CONTRACT NO.: F41622-02-D-0009



ROOM: COMMON AREA - 2ND FLOOR

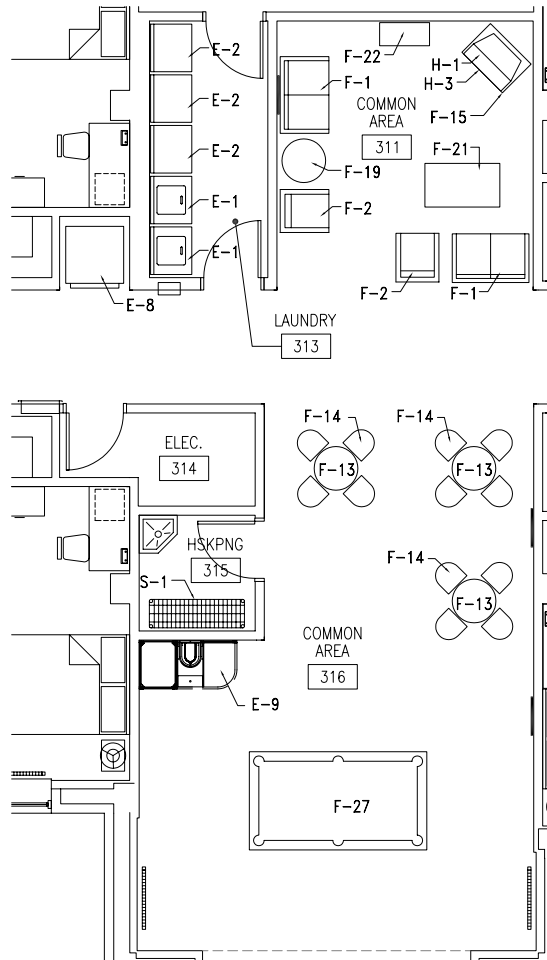
ITEM NUMBER	DESCRIPTION	QUANTITY
F-1, F-2	SOFA, SIDE CHAIR	1, 4
F-11	DINING TABLE	3
F-12	DINING CHAIRS	4 PER TABLE
F-14	DINING STOOLS	3
F-15	ENTERTAINMENT CABINET	1
F-19	END TABLE	2
F-21	COFFEE TABLE	1
E-1, E-2	EQUIPMENT - WASHER, DRYER	2, 3
E-3	EQUIPMENT - DISHWASHER	1
E-5, E-6	EQUIPMENT - RANGE W/ HOOD	1 EACH
E-7	EQUIPMENT - REFRIGERATOR	1
E-8	EQUIPMENT - VENDING MACHINE	1
E-9	SMOKE FREE SYSTEM	1
S-1	STORAGE SHELF	1
H-1, H-3	32" TELEVISION, DVD PLAYER	1 EACH

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NOVEMBER 2004

FURNITURE PLACEMENT PLAN
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



ROOM: COMMON AREA – 3RD FLOOR

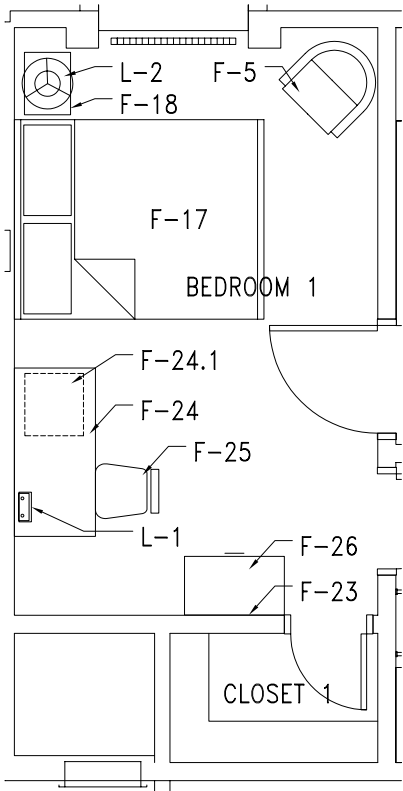
ITEM NUMBER	DESCRIPTION	QUANTITY
F-1	SOFA	2
F-2	SIDE CHAIR	2
F-13	BISTRO STYLE DINING TABLE	3
F-14	DINING STOOLS	4 PER TABLE
F-15	ENTERTAINMENT CABINET	1
F-19	END TABLE	1
F-21	COFFEE TABLE	1
F-22	BOOKCASE	1
F-27	POOL TABLE	1
E-1	EQUIPMENT – WASHER	2
E-2	EQUIPMENT – DRYER	3
E-8	EQUIPMENT – VENDING MACHINE	1
E-9	SMOKE FREE SYSTEM	1
S-1	STORAGE SHELF	1
H-1, H-3	32" TELEVISION, DVD PLAYER	1 EACH

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NOVEMBER 2004

FURNITURE PLACEMENT PLAN
SID/CID 100% SUBMISSION

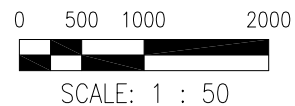
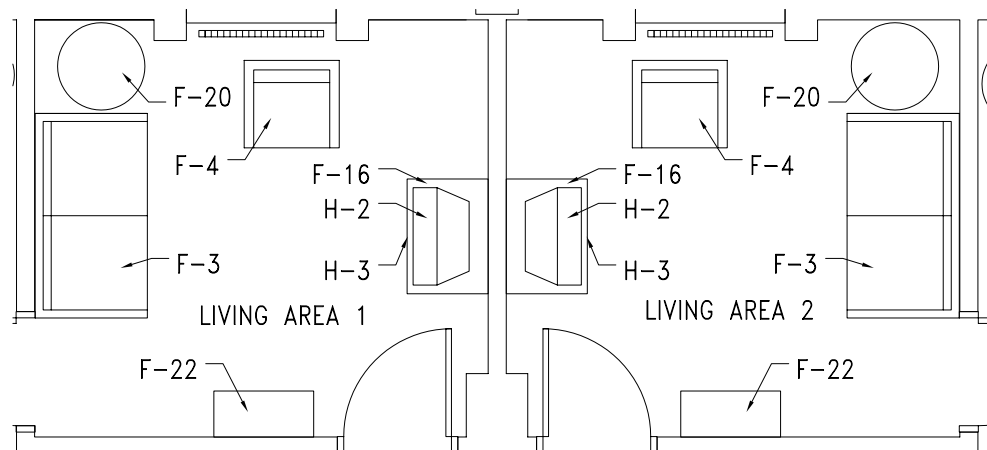
FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

3.2.2 SNCO MODULES



ROOM: SNCO BEDROOM AND CLOSET (1)

ITEM NUMBER DESCRIPTION		QUANTITY
F-5	SIDE CHAIR	1 PER MODULE
F-17	FULL BED	1 PER MODULE
F-18	NIGHTSTAND	1 PER MODULE
F-23	WALL HUNG MIRROR	1 PER MODULE
F-24	DESK	1 PER MODULE
F-24.1	THREE DRAWER PEDESTAL FOR DESK (ON WHEELS)	1 PER MODULE
F-25	DESK CHAIR	1 PER MODULE
F-26	DRESSER	1 PER MODULE
L-1	DESK LAMP	1 PER MODULE
L-2	TABLE LAMP	1 PER MODULE



ROOM: SNCO LIVING AREAS (1, 2)

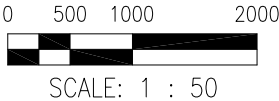
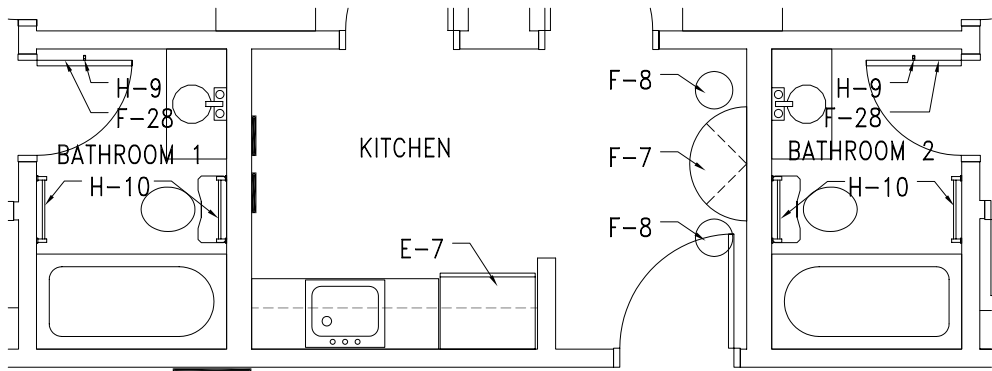
ITEM NUMBER	DESCRIPTION	QUANTITY
F-3	LOVESEAT	2 PER MODULE
F-4	EASY CHAIR	2 PER MODULE
F-16	ENTERTAINMENT CABINET	2 PER MODULE
F-20	END TABLE	2 PER MODULE
F-22	BOOKCASE	2 PER MODULE
H-2	TELEVISION	2 PER MODULE
H-3	DVD PLAYER	2 PER MODULE

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NOVEMBER 2004

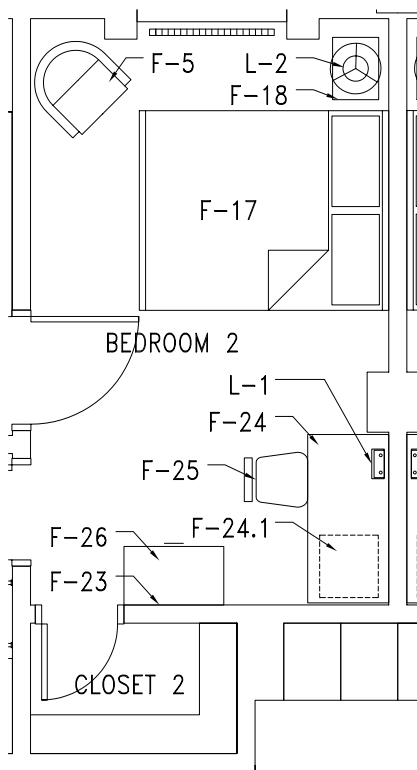
FURNITURE PLACEMENT PLAN
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



ROOM: SNCO KITCHEN & BATHROOM (1, 2)

ITEM NUMBER	DESCRIPTION	QUANTITY
F-7	WALL MOUNTED DINING TABLE	1 PER MODULE
F-8	DINING CHAIRS	2 PER MODULE
F-28	MIRROR (FULL LENGTH) MOUNTED ON BATHROOM SIDE OF DOOR	2 PER MODULE
E-7	EQUIPMENT - REFRIGERATOR	1 PER MODULE
H-9	ROBE HOOK	2 PER MODULE
H-10	TOWEL BAR	4 PER MODULE



0 500 1000 2000



SCALE: 1 : 50

ROOM: SNCO BEDROOM AND CLOSET (2)

ITEM NUMBER	DESCRIPTION	QUANTITY
F-5	SIDE CHAIR	1 PER MODULE
F-17	FULL BED	1 PER MODULE
F-18	NIGHTSTAND	1 PER MODULE
F-23	WALL HUNG MIRROR	1 PER MODULE
F-24	DESK	1 PER MODULE
F-24.1	THREE DRAWER PEDESTAL FOR DESK (ON WHEELS)	1 PER MODULE
F-25	DESK CHAIR	1 PER MODULE
F-26	DRESSER	1 PER MODULE
L-1	DESK LAMP	1 PER MODULE
L-2	TABLE LAMP	1 PER MODULE

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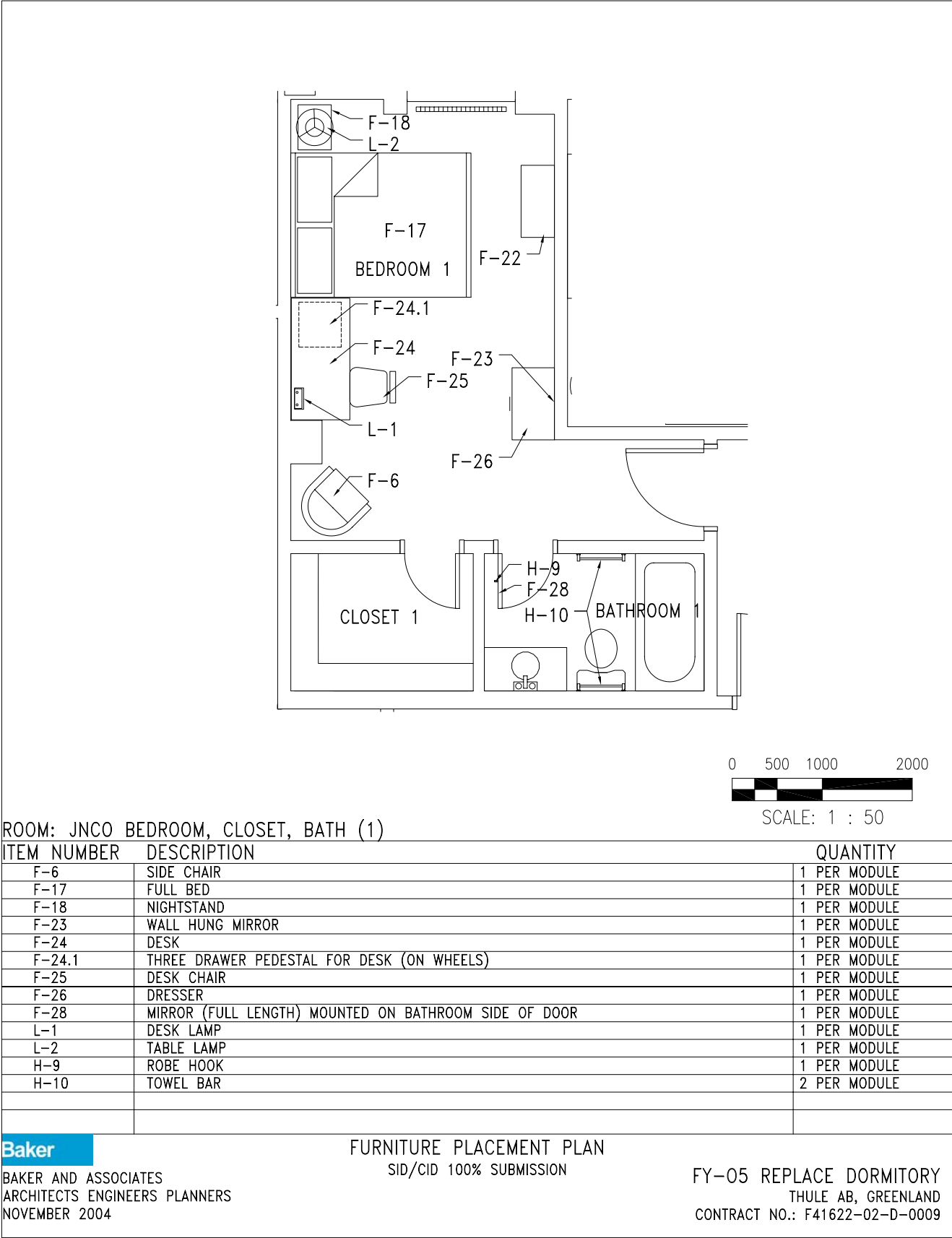
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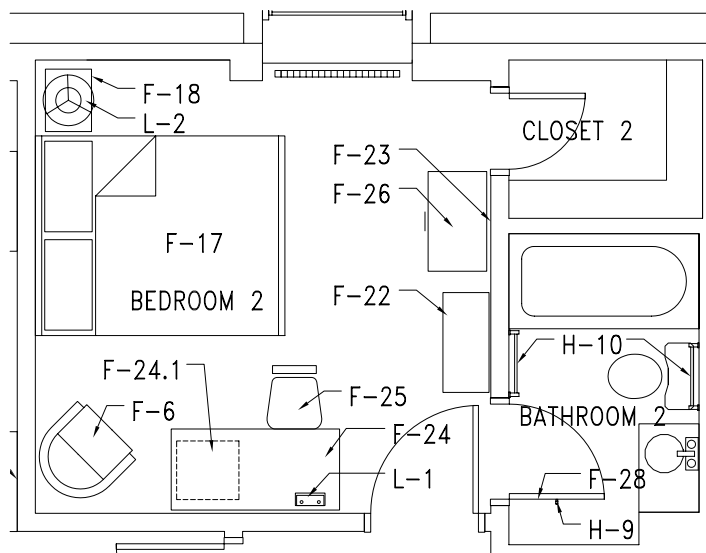
FURNITURE PLACEMENT PLAN

SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

3.2.3 JNCO MODULES





SCALE: 1 : 50

ROOM: JNCO BEDROOM, CLOSET, BATH (2)

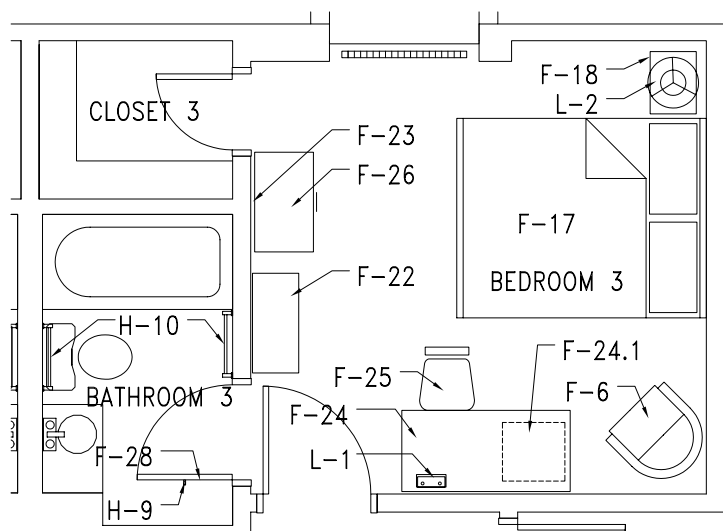
ITEM NUMBER	DESCRIPTION	QUANTITY
F-6	SIDE CHAIR	1 PER MODULE
F-17	FULL BED	1 PER MODULE
F-18	END TABLE	1 PER MODULE
F-23	WALL HUNG MIRROR	1 PER MODULE
F-24	DESK	1 PER MODULE
F-24.1	THREE DRAWER PEDESTAL FOR DESK (ON WHEELS)	1 PER MODULE
F-25	DESK CHAIR	1 PER MODULE
F-26	DRESSER	1 PER MODULE
F-28	MIRROR (FULL LENGTH) MOUNTED ON BATHROOM SIDE OF DOOR	1 PER MODULE
L-1	DESK LAMP	1 PER MODULE
L-2	TABLE LAMP	1 PER MODULE
H-9	ROBE HOOK	1 PER MODULE
H-10	TOWEL BAR	2 PER MODULE

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NOVEMBER 2004

FURNITURE PLACEMENT PLAN
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



0 500 1000 2000



SCALE: 1 : 50

ROOM: JNCO BEDROOM, CLOSET, BATH (3)

ITEM NUMBER	DESCRIPTION	QUANTITY
F-6	SIDE CHAIR	1 PER MODULE
F-17	FULL BED	1 PER MODULE
F-18	END TABLE	1 PER MODULE
F-23	WALL HUNG MIRROR	1 PER MODULE
F-24	DESK	1 PER MODULE
F-24.1	THREE DRAWER PEDESTAL FOR DESK (ON WHEELS)	1 PER MODULE
F-25	DESK CHAIR	1 PER MODULE
F-26	DRESSER	1 PER MODULE
F-28	MIRROR (FULL LENGTH) MOUNTED ON BATHROOM SIDE OF DOOR	1 PER MODULE
L-1	DESK LAMP	1 PER MODULE
L-2	TABLE LAMP	1 PER MODULE
H-9	ROBE HOOK	1 PER MODULE
H-10	TOWEL BAR	2 PER MODULE

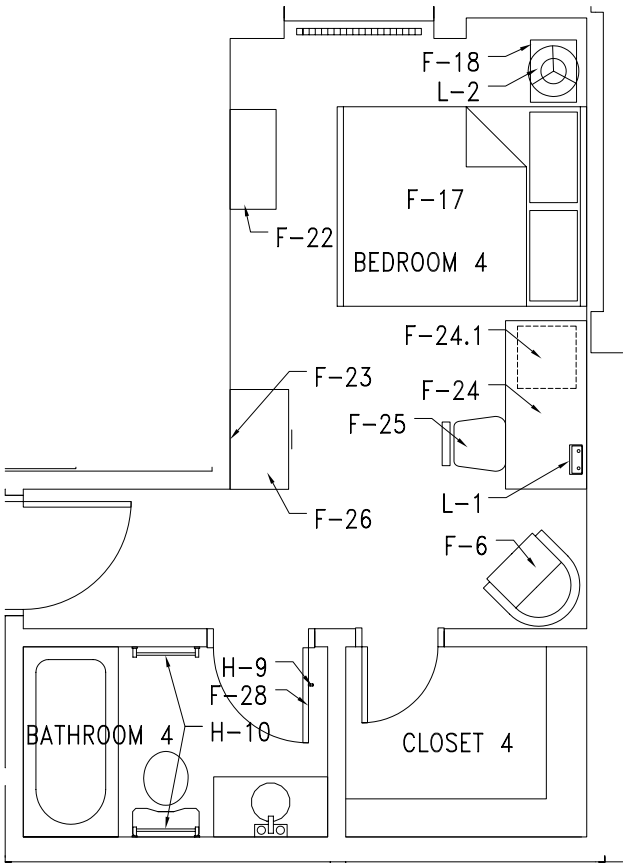
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NOVEMBER 2004

FURNITURE PLACEMENT PLAN

SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009



ROOM: JNCO BEDROOM, CLOSET, BATH (4)

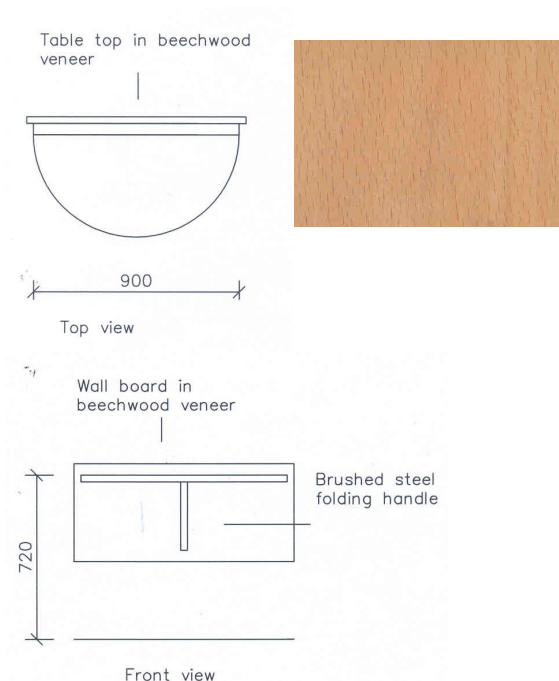
ITEM NUMBER DESCRIPTION		QUANTITY
F-6	SIDE CHAIR	1 PER MODULE
F-17	FULL BED	1 PER MODULE
F-18	NIGHTSTAND	1 PER MODULE
F-23	WALL HUNG MIRROR	1 PER MODULE
F-24	DESK	1 PER MODULE
F-24.1	THREE DRAWER PEDESTAL FOR DESK (ON WHEELS)	1 PER MODULE
F-25	DESK CHAIR	1 PER MODULE
F-26	DRESSER	1 PER MODULE
F-28	MIRROR (FULL LENGTH) MOUNTED ON BATHROOM SIDE OF DOOR	1 PER MODULE
L-1	DESK LAMP	1 PER MODULE
L-2	TABLE LAMP	1 PER MODULE
H-9	ROBE HOOK	1 PER MODULE
H-10	TOWEL BAR	2 PER MODULE

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NOVEMBER 2004

FURNITURE PLACEMENT PLAN
SID/CID 100% SUBMISSION

FY-05 REPLACE DORMITORY
THULE AB, GREENLAND
CONTRACT NO.: F41622-02-D-0009

FURNISHING ITEM: Wall Mounted Dining TableITEM NO.: F-7MODEL NO.: Special Production by ISS InterFurnSTYLE/FINISH: BeechFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

ROOM

SNCO Module Kitchen

NUMBER

101, 102, 103, 104
 201, 202, 203, 204
 301, 302, 303, 304

QUANTITY

1 per module
 (x 12 modules)

SPECS:

HEIGHT: 720 mm

WIDTH: 900 mm



FURNITURE ILLUSTRATION SHEET
 SID/CID 100% SUBMITTAL

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 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Mirror (above dresser)ITEM NO.: F-23MODEL NO.: 117STYLE/FINISH: BeechFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	2 per module (x 12 modules)
JNCO Module Bedroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)

SPECS:

HEIGHT: 80cm

WIDTH: 50cm

FURNITURE ILLUSTRATION SHEET
SID/CID 100% SUBMITTALBAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Mirror (full length)ITEM NO.: F-28MODEL NO.: 118STYLE/FINISH: Beech FrameFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOMNUMBERQUANTITY

SNCO Module Bathroom 1 & 2

101, 102, 103, 104

2 per module

201, 202, 203, 204

(x 12 modules)

301, 302, 303, 304

JNCO Module Bathroom 1, 2, 3, & 4

105, 106, 205, 206

4 per module

305, 306

(x 6 modules)

SPECS:

HEIGHT: 150cm

WIDTH: 40cm



FURNITURE ILLUSTRATION SHEET

SID/CID 100% SUBMITTAL

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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Lockers

ITEM NO.: F-29



MODEL NO.: 1 Tier w/built-in combination lock with master key; coat hooks, 1 shelf, coat hanging rod

STYLE/FINISH: E 0-02 Silver Grey Phenolic Panels

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Corridor	108, 208, 308	8 per floor (x 3 floors)
Corridor	110, 210, 310	8 per floor (x 3 floors)

SPECS:

HEIGHT: 71 3/4" (1822mm)
WIDTH: 18" (457mm)
DEPTH: 23 - 5/8" (600mm)

SHELF HEIGHT: 305mm from base of locker



FURNITURE ILLUSTRATION SHEET
SID/CID 100% SUBMITTAL

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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Vanity LightITEM NO.: L-3MODEL NO.: 11929 25WT8 WH 120STYLE/FINISH: WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bathroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	2 per module (x 12 modules)
JNCO Module Bathroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)
Lobby Bathroom	116	1

SPECS:
 DEPTH: 12.4 cm
 WIDTH: 10.5 cm
 LENGTH: 65 cm



FURNITURE ILLUSTRATION SHEET
 SID/CID 100% SUBMITTAL

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 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Pendant Light

ITEM NO.: L-4

MODEL NO.: CP3850-PT (WHT)-WC

STYLE/FINISH: PT – Painted White (WHT) with
White Suspension Cord (WC)

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A



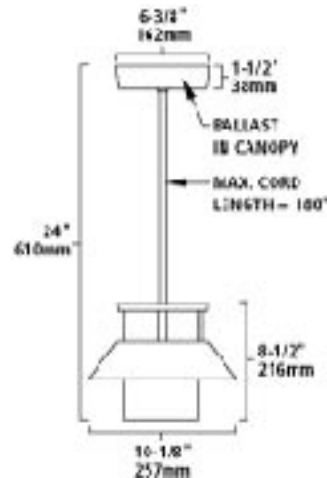
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 3 rd Floor	316	3

SPECS:

HEIGHT: 8-1/2" (216 mm)
WIDTH: 10-1/8" (257 mm)
CORD LENGTH: 24" (610 mm)
MAX CORD LENGTH: 180" (4572 mm)

SEE DRAWING AT RIGHT.



FURNITURE ILLUSTRATION SHEET
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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Ceiling Fan w/Light Kit

ITEM NO.: L-5

MODEL NO.: Bel Air

STYLE/FINISH: White

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A



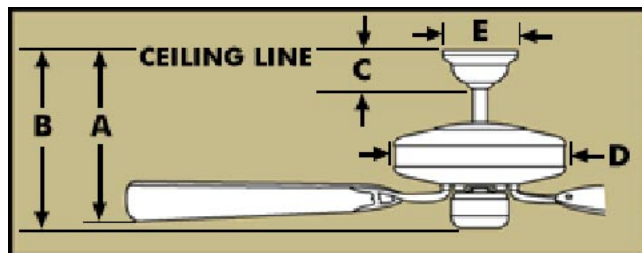
COMPONENT: <u>Motor</u>	MODEL NO.: <u>3811T</u>	QUANTITY: _____
COMPONENT: <u>Blades</u>	MODEL NO.: <u>B611</u>	QUANTITY: _____
COMPONENT: <u>Intelli-Touch Controls</u>	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	2 per module (x 12 modules)
JNCO Module Bedroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)

SPECS:

- A: 9.25"
- B: 14" (incl. light fixture and glass)
- C: 3"
- D: 12.25"
- E: 5.6"

SEE DRAWING AT RIGHT.



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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Recessed Light w/TrimITEM NO.: L-6; L-6.1MODEL NO.: LZX; 6B2WSTYLE/FINISH: Baffle Narrow Flange-WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: <u>Recessed Can</u>	MODEL NO.: <u>LZX</u>	QUANTITY: <u>see below</u>
COMPONENT: <u>Trim</u>	MODEL NO.: <u>6B2W</u>	QUANTITY: <u>see below</u>
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Modules (Living Areas, Kitchen, Closets, Bathroom)	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	10 per module (x 12 modules)
JNCO Modules (Kitchen, Closets, Bathrooms)	105, 106, 205, 206 305, 306	11 per module (x 6 modules)
Stairwells	107, 109	2
Stairwells	207, 209	2
Stairwells	307, 309	2
Stair Vestibule	119, 219, 319	2 each
Stair Vestibule	120, 220, 320	3 each
Corridor 1 st Floor	108	9
Corridor 1 st Floor	110	5
Corridor 2 nd Floor	208	9
Corridor 2 nd Floor	210	5
Corridor 3 rd Floor	308	9
Corridor 3 rd Floor	310	5



FURNITURE ILLUSTRATION SHEET

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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Recessed Light w/TrimITEM NO.: L-6; L-6.1MODEL NO.: LZX; 6B2WSTYLE/FINISH: Baffle Narrow Flange-WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	Recessed Can	MODEL NO.:	LZX	QUANTITY:	see below
COMPONENT:	Trim	MODEL NO.:	6B2W	QUANTITY:	see below
COMPONENT:		MODEL NO.:		QUANTITY:	
COMPONENT:		MODEL NO.:		QUANTITY:	
COMPONENT:		MODEL NO.:		QUANTITY:	
COMPONENT:		MODEL NO.:		QUANTITY:	

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Laundry Room - 1 st , 2 nd , 3 rd Floor	113, 213, 313	2 per floor (x 3 floors)
Elec. Room - 1 st , 2 nd , 3 rd Floor	114, 214, 314	1 per floor (x 3 floors)
Housekeeping - 1 st , 2 nd , 3 rd Floor	115, 215, 315	1 per floor (x 3 floors)
Lobby Toilet	116	1
Vestibule	117	2
Storage	118	1
Lobby 1 ST Floor	111	14
Common Area 2 nd Floor	216	17
Kitchen 2 nd Floor	211	4
Common Area 3 rd Floor	316	14
Common Area 3 rd Floor	311	4

SPECS:

HEIGHT: 6-7/8" (17.5 cm)

WIDTH: 13-7/8" (38.1 cm)

LENGTH: 14-15/16" (37.9 cm)

FURNITURE ILLUSTRATION SHEET
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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Recessed Light w/Shower TrimITEM NO.: L-6; L-6.2MODEL NO.: LZX; 6LF1PFSTYLE/FINISH: Flush Opal PlasticFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: <u>Recessed Can</u>	MODEL NO.: <u>LZX</u>	QUANTITY: <u>see below</u>
COMPONENT: <u>Shower Trim</u>	MODEL NO.: <u>6LF1PF</u>	QUANTITY: <u>see below</u>
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOMNUMBERQUANTITY

SNCO Module Bathrooms

101, 102, 103, 104
201, 202, 203, 204
301, 302, 303, 3042 per module
(x 12 modules)

JNCO Module Bathrooms

105, 106, 205, 206
305, 3064 per module
(x 6 modules)SPECS:HEIGHT: 6-7/8" (17.5 cm)WIDTH: 13-7/8" (38.1 cm)LENGTH: 14-15/16" (37.9 cm)FURNITURE ILLUSTRATION SHEET
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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Cabinet LightITEM NO.: L-7MODEL NO.: UCHD 3 120 CSW R6STYLE/FINISH: WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Kitchen	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	1 per module (x 12 modules)
JNCO Module Kitchen	105, 106, 205, 206 305, 306	1 per module (x 6 modules)
Kitchen 2 nd Floor	211	3

SPECS:

LENGTH: 18" (457mm)

Fixture head rotates 20 degrees backwards and 45 degrees forward to aim light where it is needed.

25W G8 halogen bulb(s) included.

FURNITURE ILLUSTRATION SHEET
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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Window Light

ITEM NO.: L-8

MODEL NO.: MS5 39T5HO 120 GEB10PS

STYLE/FINISH: White, Symmetric Reflector



FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	4 per module (x 12 modules)
JNCO Module Bedrooms 1, 2, 3, 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)

SPECS:
 DEPTH: 2-13/16" (7.1 cm)
 WIDTH: 4-3/4" (12.1 cm)
 LENGTH: 34-1/4" (87 cm)



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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: 2" x 4' Fluorescent LightITEM NO.: L-9MODEL NO.: MS5STYLE/FINISH: WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Mechanical Room 1 st Floor	112	10
Mechanical Room 2 nd Floor	212	6
Mechanical Room 3 rd Floor	312	6

SPECS:

DEPTH: 2-1/4" (5.7 cm)

WIDTH: 2" (5.1 cm)

LENGTH: 34-1/4" (87 cm)



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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Wall Sconce

ITEM NO.: L-10

MODEL NO.: AVSP 2 13DTT MDR 120 GEB10

STYLE/FINISH: Anodized Aluminum Back Plate
Metal diffuser with mini slots

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A



COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Corridor	108, 208, 308	4 per floor (x 3 floors)
Corridor	110, 210, 310	2 per floor (x 3 floors)
Stairwell	107, 207	1 per floor (x 3 floors)
Stairwell	109, 209	1 per floor (x 3 floors)

SPECS:
 DEPTH: 3-15/16" (10.0 cm)
 WIDTH: 10-13/16" (27.5 cm)
 HEIGHT: 11-11/16" (29.68 cm)



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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Emergency LightITEM NO.: L-11MODEL NO.: 6ELM2PNSTYLE/FINISH: WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Corridor	108, 208, 308	2 per floor
Corridor	110, 210, 310	2 per floor
Stairwell	107, 207, 307	1 per floor
Stairwell	109, 209, 309	1 per floor
Mechanical Room	112, 212, 312	1 each
Vestibule	117	1
Stair Vestibule	119, 120	1 each
Lobby 1 st Floor	111	2
Common Area 2 nd Floor	211, 216	1 each
Common Area 3 rd Floor	311, 316	1 each

SPECS:

DEPTH: 95 mm

WIDTH: 317 mm

HEIGHT: 127 mm

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NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Exit LightITEM NO.: L-12MODEL NO.: LX W G 120 ELNSTYLE/FINISH: White housing, green panelFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Corridor	108, 208, 308	1 per floor
Corridor	110, 210, 310	1 per floor
Stairwell	107	1 per floor
Stairwell	109	1 per floor
Mechanical Room	112	1
Lobby 1 st Floor	111	3
Common Area 2 nd Floor	216	2
Common Area 3 rd Floor	316	2

SPECS:

DEPTH: 2-1/2" (64 mm)

WIDTH: 11-1/2" (292 mm)

HEIGHT: 7-7/8" (200 mm)

FURNITURE ILLUSTRATION SHEET
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NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: WasherITEM NO.: E-1MODEL NO.: GHW9100LWSTYLE/FINISH: Dove Grey on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Laundry Room 1 st Floor	113	2
Laundry Room 2 nd Floor	213	2
Laundry Room 3 rd Floor	313	2

SPECS:

DEPTH: 31-1/2" (800 mm)

WIDTH: 27" (685.8 mm)

HEIGHT: 38" (965.2 mm)



FURNITURE ILLUSTRATION SHEET

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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Dryer

ITEM NO.: E-2

MODEL NO.: GEW9200LW

STYLE/FINISH: Dove Grey on White

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A



COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Laundry Room 1 st Floor	113	3
Laundry Room 2 nd Floor	213	3
Laundry Room 3 rd Floor	313	3

SPECS:

DEPTH: 31-1/2" (800 mm)
 DEPTH W/DOOR
 OPEN: 51-1/2" (1308.1 mm)
 WIDTH: 27" (685.8 mm)
 HEIGHT: 38" (965.2 mm)



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FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: DishwasherITEM NO.: E-3MODEL NO.: DU850SWLQSTYLE/FINISH: White on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

ROOMCommon Area Kitchen 2nd FloorNUMBER

211

QUANTITY

1

SPECS:

DEPTH: 24" (610 mm)

WIDTH: 23-7/8" (606.4 mm)

HEIGHT: 33-7/8" (860.4 mm)

MAX. UNDERCOUNTER

HEIGHT: 34-3/8" (873.1 mm)

MIN. UNDERCOUNTER

HEIGHT: 33-7/8" (860.4 mm)



FURNITURE ILLUSTRATION SHEET

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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: MicrowaveITEM NO.: E-4MODEL NO.: MT4145SKQSTYLE/FINISH: White on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Kitchens	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	1 per module (x 12 modules)
JNCO Module Kitchens	105, 106, 205, 206 305, 306	1 per module (x 6 modules)
Common Area Kitchen 2 nd Floor	211	1

SPECS:

DEPTH: 17-1/4" (438.2 mm)

WIDTH: 21-7/8" (555.6 mm)

HEIGHT: 12-5/8" (320.7 mm)

FURNITURE ILLUSTRATION SHEET
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NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Range (with oven below)ITEM NO.: E-5MODEL NO.: RF368LXMQSTYLE/FINISH: White on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOMCommon Area Kitchen 2nd FloorNUMBER

211

QUANTITY

1

SPECS:

DEPTH: 24-13/16" (630.2 mm)

WIDTH: 29-7/8" (758.8 mm)

HEIGHT: 46-7/8" (1190.6 mm)



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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Range HoodITEM NO.: E-6MODEL NO.: GZ5730XLQSTYLE/FINISH: White on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

ROOMCommon Area Kitchen 2nd FloorNUMBER

211

QUANTITY

1

SPECS:

DEPTH: 20" (508 mm)

WIDTH: 29-7/8" (758.8 mm)

HEIGHT: 7-1/4" (184.15 mm)



FURNITURE ILLUSTRATION SHEET
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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: RefrigeratorITEM NO.: E-7MODEL NO.: GR9SHKXMQSTYLE/FINISH: White on WhiteFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Kitchens	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	1 per module (x 12 modules)
JNCO Module Kitchens	105, 106, 205, 206 305, 306	1 per module (x 6 modules)
Common Area Kitchen 2 nd Floor	211	1

SPECS:

DEPTH (W/HANDLES):	31-1/2" (800 mm)
DEPTH (W/ DOOR OPEN	
90 DEGREES):	58-1/4" (1479.5 mm)
WIDTH:	29-1/2" (749.3 mm)
CABINET HEIGHT:	65-1/2" (1663.7 mm)
HEIGHT (W/HINGE CAP):	65-1/2" (1663.7 mm)



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NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Vending MachineITEM NO.: E-8MODEL NO.: FM 3000 Combination Soda/SnackSTYLE/FINISH: Silver/Black Metal; double glazed laminated glass doorFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Lobby 1 st Floor	111	1
Common Area 2 nd Floor	216	1
Common Area 3 rd Floor	316	1

SPECS:

DEPTH: 890 mm
 DEPTH (w/door open): 1580mm
 WIDTH: 850 mm
 HEIGHT: 1830 mm



FURNITURE ILLUSTRATION SHEET

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 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Smoking StationITEM NO.: E-9MODEL NO.: T30STYLE/FINISH: Lacquered Beech Wood/GlassFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 2 nd Floor	216	1
Common Area 3 rd Floor	316	1

SPECS:

DEPTH: 800 mm
 WIDTH: 1530mm
 HEIGHT: 2130 mm)



FURNITURE ILLUSTRATION SHEET
 SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Smoking Station

ITEM NO.: E-10

MODEL NO.: T50

STYLE/FINISH: Lacquered Beech Wood/Glass

FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A



COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Lobby 1 st Floor	111	1

SPECS:
 DEPTH: 800 mm
 WIDTH: 2120mm
 HEIGHT: 2130 mm)



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 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Aluminum BlindsITEM NO.: LN-1MODEL NO.: Lightlines 1"STYLE/FINISH: Crème de la CrèmeFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	4 per module (x 12 modules)
JNCO Module Bedrooms 1, 2, 3, 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)
Stairwells	107, 109, 207, 209, 307, 309	1 per room
Vestibule	119, 120	1 per room

SPECS:

WINDOW SIZE (inside dimensions)

WIDTH: 1200mm

HEIGHT: 1200mm

FURNITURE ILLUSTRATION SHEET
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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Aluminum Blinds

ITEM NO.: LN-2

MODEL NO.: Lightlines 1”

STYLE/FINISH: 018 Satin Silver



FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 2 nd Floor	216	2

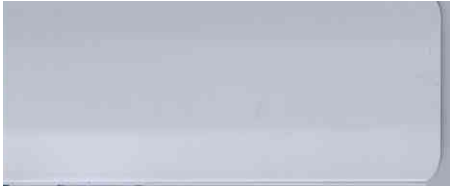
SPECS:
 WINDOW SIZE (inside dimensions)
 WIDTH: 1200mm
 HEIGHT: 1200mm



FURNITURE ILLUSTRATION SHEET
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BAKER AND ASSOCIATES
 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Aluminum BlindsITEM NO.: LN-3MODEL NO.: Lightlines 1"STYLE/FINISH: 018 Satin SilverFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 2 nd Floor	216	1
Common Area 3 rd Floor	316	1

SPECS:
 WINDOW SIZE (inside dimensions)
 WIDTH: 1500mm
 HEIGHT: 1500mm



FURNITURE ILLUSTRATION SHEET
 SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Roll down ShadesITEM NO.: LN-4MODEL NO.: Blackout PremiereSTYLE/FINISH:FABRIC NO.: UF-7PATTERN: BM-623-0COLOR: Sahel

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	4 per module (x 12 modules)
JNCO Module Bedrooms 1, 2, 3, 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)
Common Area 2 nd Floor	216	2

SPECS:

WINDOW SIZE (inside dimensions)

WIDTH: 1200mm

HEIGHT: 1200mm



FURNITURE ILLUSTRATION SHEET

SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Roll down Shades

ITEM NO.: LN-5

MODEL NO.: Blackout Premiere

STYLE/FINISH:

FABRIC NO.: UF-7

PATTERN: BM-623-0

COLOR: Sahel



COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 2 nd Floor	216	1
Common Area 3 rd Floor	316	1

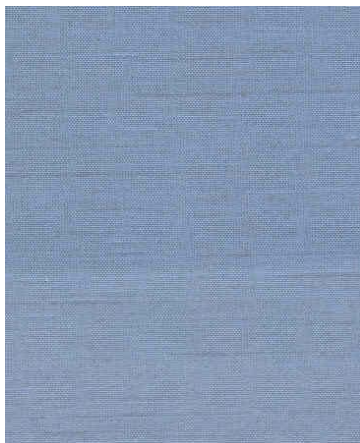
SPECS:
 WINDOW SIZE (inside dimensions)
 WIDTH: 1500mm
 HEIGHT: 1500mm



FURNITURE ILLUSTRATION SHEET
 SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: DraperiesITEM NO.: LN-6MODEL NO.: BlackoutSTYLE/FINISH: Outside mount, pinch pleat, double fullnessFABRIC NO.: UF-6PATTERN: Exquisite LCOLOR: Wedgewood

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	4 per module (x 12 modules)
JNCO Module Bedrooms 1, 2, 3, 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)
Common Area 2 nd Floor	216	2

SPECS:

WINDOW SIZE (inside dimensions)

WIDTH: 1200mm

HEIGHT: 1200mm

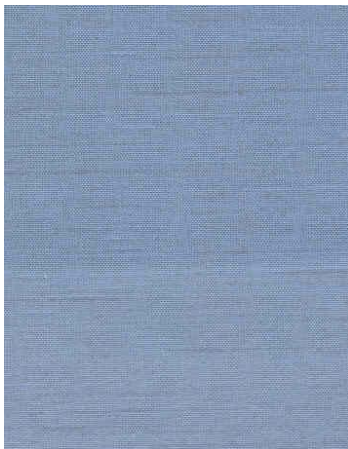
FABRIC SPECS:

WIDTH: 54" (137cm)

REPEAT: NO REPEAT

CONTENT: 100% FR POLYESTER; INHERENTLY FLAME RETARDENT, PASSES NFPA 701

FURNITURE ILLUSTRATION SHEET
SID/CID 100% SUBMITTALBAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: DraperiesITEM NO.: LN-7MODEL NO.: BlackoutSTYLE/FINISH: Outside mount, pinch pleat, double fullnessFABRIC NO.: UF-6PATTERN: Exquisite LCOLOR: Wedgewood

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
Common Area 2 nd Floor	216	1
Common Area 3 rd Floor	316	1

SPECS:

WINDOW SIZE (inside dimensions)

WIDTH: 1500mm

HEIGHT: 1500mm

FABRIC SPECS:

WIDTH: 54" (137cm)

REPEAT: NO REPEAT

CONTENT: 100% FR POLYESTER; INHERENTLY FLAME RETARDENT, PASSES NFPA 701

FURNITURE ILLUSTRATION SHEET
SID/CID 100% SUBMITTALBAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Shower Curtain Rod

ITEM NO.: H-6

MODEL NO.: 1405176-5

STYLE/FINISH: Stainless Steel



FABRIC NO.: N/A

PATTERN: N/A

COLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bathroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	2 per module (x 12 modules)
JNCO Module Bathroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)

SPECS:
LENGTH: 5'

FURNISHING ITEM: Adjustable Shower HeadITEM NO.: H-7MODEL NO.: Vario Shower Set
~~75824~~STYLE/FINISH: ChromeFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOMNUMBERQUANTITY

SNCO Module Bathroom 1 & 2

101, 102, 103, 104

2 per module

201, 202, 203, 204

(x 12 modules)

301, 302, 303, 304

JNCO Module Bathroom 1, 2, 3, & 4

105, 106, 205, 206

4 per module

305, 306

(x 6 modules)

SPECS:

DEPTH: _____

WIDTH: _____

LENGTH: _____



FURNITURE ILLUSTRATION SHEET

SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Toilet Paper Holder

ITEM NO.: H-8

MODEL NO.: 48307

STYLE/FINISH: Chrome

FABRIC NO.: N/A

PATTERN: N/A

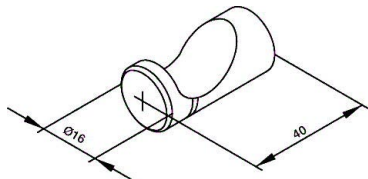
COLOR: N/A



COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bathroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	2 per module (x 12 modules)
JNCO Module Bathroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	4 per module (x 6 modules)

SPECS:
DEPTH: _____
WIDTH: _____
LENGTH: _____



FURNITURE ILLUSTRATION SHEET
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BAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Robe HookITEM NO.: H-9MODEL NO.: 48306STYLE/FINISH: ChromeFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOMNUMBERQUANTITY

SNCO Module Bathroom 1 & 2

101, 102, 103, 104
201, 202, 203, 204
301, 302, 303, 304
105, 106, 205, 206
305, 306

2 per module
(x 12 modules)

JNCO Module Bathroom 1, 2, 3, & 4

4 per module
(x 6 modules)
SPECS:

DEPTH: _____

WIDTH: _____

LENGTH: _____


FURNITURE ILLUSTRATION SHEET
SID/CID 100% SUBMITTAL

BAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

FURNISHING ITEM: Towel Bar

ITEM NO.: H-10

MODEL NO.: 48304

STYLE/FINISH: Chrome



FABRIC NO.: N/A

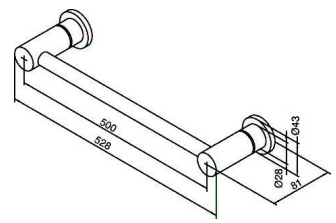
PATTERN: N/A

COLOR: N/A

COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:
COMPONENT:	MODEL NO.:	QUANTITY:

<u>ROOM</u>	<u>NUMBER</u>	<u>QUANTITY</u>
SNCO Module Bathroom 1 & 2	101, 102, 103, 104 201, 202, 203, 204 301, 302, 303, 304	4 per module (x 12 modules)
JNCO Module Bathroom 1, 2, 3, & 4	105, 106, 205, 206 305, 306	8 per module (x 6 modules)

SPECS:
DEPTH: _____
WIDTH: _____
LENGTH: _____



FURNITURE ILLUSTRATION SHEET
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 ARCHITECTS ENGINEERS PLANNERS
 NOVEMBER 2004

FY05 Replace Dormitory
 Thule Air Base, Greenland
 Contract No.: F41622-02-D-0009

FURNISHING ITEM: Coat HooksITEM NO.: H-11MODEL NO.: 2187

model 2187

STYLE/FINISH: Bright BlueFABRIC NO.: N/APATTERN: N/ACOLOR: N/A

COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____
COMPONENT: _____	MODEL NO.: _____	QUANTITY: _____

ROOM

Vestibule

NUMBER

117, 119, 120

QUANTITY

2 each

SPECS:

DEPTH: 3-3/4"

WIDTH: 20-1/2"

HEIGHT: 4"



FURNITURE ILLUSTRATION SHEET

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ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

FY05 Replace Dormitory
Thule Air Base, Greenland
Contract No.: F41622-02-D-0009

ORDER DATA SHEET							
Item Number:	F-7						
Item Description:	Wall mounted dining table (SNCO)						
Model No.:	Special Production						
Color/Finish:	Beech						
Manufacturer:	Special Production by ISS InterFurn						
Source/Dealer:	ISS InterFurn						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:	Table Top	Number:		Price:		Quantity:	
Component:	Wall Board	Number:		Price:		Quantity:	
Component:	Steel Folding Handle	Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	H 720mm x W 900mm				
Room:	SNCO Module Kitchen	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	1 per module (x 12 modules)		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	12	Item Price:	283.00	Total:	\$3,396.00		
Special Instructions:	Table top in beechwood veneer, wall board in beechwood veneer, brushed steel folding handle						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	F-23						
Item Description:	Mirror (above dresser)						
Model No.:	117						
Color/Finish:	Beech frame						
Manufacturer:	Kaagaard						
Source/Dealer:	ISS InterFurn						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	50cm x 80cm				
Room:	SNCO Module Bedroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bedroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	65.00	Total:	\$3,120.00		
Special Instructions:	Hang vertically above dresser.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	F-28						
Item Description:	Mirror (full length)						
Model No.:	118						
Color/Finish:	Beech frame						
Manufacturer:	Kaagaard						
Source/Dealer:	ISS InterFurn						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	40cm x 150cm				
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	86.00	Total:	\$4,128.00		
Special Instructions:	Hang on inside face of bathroom door. Use sturdy concealed mounting techniques on all four corners of the mirror. Double stick tape it not allowed.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	F-29						
Item Description:	Lockers						
Model No.:	Single Tier, 1 shelf, coat hooks and built-in combination lock with master key						
Color/Finish:	Solid Phenolic composite panels in rough matte finish; Color -						
Manufacturer:	The Young Group: Design-Tec						
Source/Dealer:	The Young Group: Design- Tec						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Height:	71-3/4" (1822 mm)	Dimensions:	D 23-5/8" (600mm) x W 18" (457mm)				
Room:	Corridor	Number:	108, 208, 308	Quantity:	8 per floor (x 3 floors)		
Room:	Corridor	Number:	110, 210, 310	Quantity:	8 per floor (x 3 floors)		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	ed in Construction C	Total:	#VALUE!		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-3						
Item Description:	Vanity Light						
Model No.:	11929 25WT8 WH 120						
Color/Finish:	White						
Manufacturer:	Lithonia						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	12.4cm x 10.5cm. x 65cm.				
Room:	SNCO Module Bathrooms	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathrooms	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:	Lobby Bathroom	Number:	116	Quantity:	1		
Estimated or Actual Freight Charges:							
Total Quantity:	49	Item Price:		Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-4						
Item Description:	Pendant Light (above Pool Table)						
Model No.:	CP3850-PT-WC						
Color/Finish:	Painted - White (WHT) w/ White suspension cord (WC)						
Manufacturer:	Visa Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Max Length:	180 inch.	Dimensions:	8 1/2 inch. x 10 1/8 inch. x 24 inch.				
Room:	Common Area 3rd Floor	Number:	316	Quantity:	3		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	3	Item Price:		Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-5						
Item Description:	Ceiling Fan w/light						
Model No.:	BEL AIR - Motor: 3811T; Blades: B611						
Color/Finish:	Snow White						
Manufacturer:	Casablanca Fan Co.						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:	Motor	Number:	3811T	Price:		Quantity:	
Component:	Blades	Number:	B611	Price:		Quantity:	
Component:	Intelli-Touch Controls	Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	A 9.25" B 14" C 3" D 12.25" E 5.6"				
Room:	SNCO Module Bedroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bedroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:		Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-6; L-6.1						
Item Description:	Recessed Light Can with Trim						
Model No.:	LZX; 6B2W						
Color/Finish:	White						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:					Expiration Date:		
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:	Recessed Can	Number:	LZX	Price:		Quantity:	see below
Component:	Trim	Number:	6B2W	Price:		Quantity:	see below
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:			Dimensions:	17.5cm x 38.1cm x 37.9cm			
Room:	SNCO Module (Living Areas, Kitchen, Closets, Bathroom)	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	10 per module (x 12 modules)		
Room:	JNCO Module (Kitchen, Closets, Bathrooms)	Number:	105, 106, 205, 206, 305, 306	Quantity:	11 per module (x 6 modules)		
Room:	Stairwells	Number:	105, 106, 205, 206, 305, 306	Quantity:	6		
Room:	Stair Vestibule	Number:	119, 120	Quantity:	1 each		
Room:	Corridor 1st Floor	Number:	108	Quantity:	9		
Room:	Corridor 1st Floor	Number:	110	Quantity:	5		
Room:	Corridor 2nd Floor	Number:	208	Quantity:	9		
Room:	Corridor 2nd Floor	Number:	210	Quantity:	5		
Room:	Corridor 3rd Floor	Number:	308	Quantity:	9		
Room:	Corridor 3rd Floor	Number:	310	Quantity:	5		
Estimated or Actual Freight Charges:							
Total Quantity:	CONT. ON NEXT PAGE		Item Price:			Total:	
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number: L-6; L-6.1							
Item Description: Recessed Light Can with Trim							
Model No.: LZX; 6B2W							
Color/Finish: White							
Manufacturer: Lithonia Lighting							
Source/Dealer:							
GSA Contract No.:							
Expiration Date:							
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:	Recessed Can	Number:	LZX	Price:		Quantity:	see below
Component:	Trim	Number:	6B2W	Price:		Quantity:	see below
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer: N/A							
Pattern: N/A							
Color: N/A							
Weight:				Dimensions:		17.5cm x 38.1cm x 37.9cm	
Room:	Laundry Room - 1 st , 2 nd , 3 rd Floor	Number:	113, 213, 313	Quantity:		2 per room	
Room:	Elec. Room - 1 st , 2 nd , 3 rd Floor	Number:	114, 214, 314	Quantity:		1 per room	
Room:	Housekeeping - 1 st , 2 nd , 3 rd Floor	Number:	115, 215, 315	Quantity:		1 per room	
Room:	Lobby Toilet	Number:	116	Quantity:		1	
Room:	Vestibule	Number:	117	Quantity:		2	
Room:	Storage	Number:	118	Quantity:		1	
Room:	Lobby 1 st Floor	Number:	111	Quantity:		14	
Room:	Common Area 2 nd Floor	Number:	216	Quantity:		17	
Room:	Kitchen 2 nd Floor	Number:	211	Quantity:		4	
Room:	Common Area 3 rd Floor	Number:	316	Quantity:		14	
Room:	Common Area 3 rd Floor	Number:	311	Quantity:		4	
Estimated or Actual Freight Charges:							
Total Quantity:		305		Item Price:			
				Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:		Part of complete CID Package					

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NOVEMBER 2004

ORDER DATA SHEET

SID/CID 100% SUBMISSION

FY05 REPLACE DORMITORY
THULE AIR BASE, GREENLAND
CONTRACT NO.: F41622-02-D-0009

ORDER DATA SHEET							
Item Number:	L-6; L-6.2						
Item Description:	Recessed Light Can with Shower Trim						
Model No.:	LZX; 6LF1PF						
Color/Finish:	Flush Opal Plastic						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:	Recessed Can	Number:	LZX	Price:		Quantity:	see below
Component:	Shower Trim	Number:	6LF1PF	Price:		Quantity:	see below
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	17.5cm x 38.1cm x 37.9cm				
Room:	SNCO Module Bathrooms	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathrooms	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:		Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET						
Item Number:	L-7					
Item Description:	Cabinet Lights					
Model No.:	UCHD 3 120 CSW R6					
Color/Finish:	White					
Manufacturer:	Lithonia Lighting					
Source/Dealer:						
GSA Contract No.:				Expiration Date:		
FSC Group:				SIN #:		
FSC Part, Sect.:				MOL Amount:		
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Component:		Number:		Price:		Quantity:
Fabric Name:	N/A	Number:		Price:		Quantity:
Manufacturer:	N/A					
Pattern:	N/A					
Color:	N/A					
Weight:		Dimensions:	18 inch.			
Room:	SNCO Module Kitchen	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	3 per module (x 12 modules)	
Room:	JNCO Module Kitchen	Number:	105, 106, 205, 206, 305, 306	Quantity:	5 per module (x 6 modules)	
Room:	Kitchen 2 nd Floor	Number:	211	Quantity:	8	
Estimated or Actual Freight Charges:						
Total Quantity:	74	Item Price:	0.00	Total:		
Cost included in Construction Cost Estimate						
Special Instructions:	Fixture head rotates 20 degrees backwards and 45 degrees forward to aim light where needed. Mount on top of wall cabinets to reflect light off ceiling and below to shine light on countertop.					
Justification:	Part of complete CID Package					

ORDER DATA SHEET							
Item Number:	L-8						
Item Description:	34" Surface Strip Window Fluorescent Light						
Model No.:	MS5 39T5HO 120 GEB10PS						
Color/Finish:	White						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	7.1cm x 12.1cm x 87cm				
Room:	SNCO Module Bedrooms 1, 2, and Living Rooms 1, 2	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	4 per module (x 12 modules)		
Room:	JNCO Module Bedrooms 1, 2, 3, 4	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	72	Item Price:	0.00	Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-9						
Item Description:	2"x4' Fluorescent Light						
Model No.:	MS5						
Color/Finish:	White						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	5.7cm x 5.1cm x 87cm				
Room:	Mechanical Room 1st Floor	Number:	112	Quantity:	10		
Room:	Mechanical Room 2nd Floor	Number:	212	Quantity:	6		
Room:	Mechanical Room 2nd Floor	Number:	312	Quantity:	6		
Estimated or Actual Freight Charges:							
Total Quantity:	22	Item Price:	0.00	Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

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NOVEMBER 2004

ORDER DATA SHEET

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FY05 REPLACE DORMITORY
THULE AIR BASE, GREENLAND
CONTRACT NO.: F41622-02-D-0009

ORDER DATA SHEET							
Item Number:	L-10						
Item Description:	Wall Sconce						
Model No.:	AVSP 2 13DTT MDR 120 GEB10						
Color/Finish:	Metal diffuser with mini slots, Anodized aluminum back plate						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	10cm x 27.5cm x 29.68cm				
Room:	Corridor	Number:	108, 208, 308	Quantity:	4 per floor (x3 floors)		
Room:	Corridor	Number:	110, 210, 310	Quantity:	2 per floor (x3 floors)		
Room:	Stairwell	Number:	107, 207	Quantity:	1 per floor (x2 floors)		
Room:	Stairwell	Number:	109, 209	Quantity:	1 per floor (x2 floors)		
Estimated or Actual Freight Charges:							
Total Quantity:	22	Item Price:	0.00	Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-11						
Item Description:	Emergency Light						
Model No.:	6ELM2P N						
Color/Finish:	White						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:					Expiration Date:		
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	95mm x 317mm x 127mm				
Room:	Corridor	Number:	108, 208, 308	Quantity:	2 per floor		
Room:	Corridor	Number:	110, 210, 310	Quantity:	1 per floor		
Room:	Stairwell	Number:	107, 207, 307	Quantity:	1 per floor		
Room:	Stairwell	Number:	109, 209, 309	Quantity:	1 per floor		
Room:	Mechanical Room	Number:	112, 212, 312	Quantity:	1 each		
Room:	Vestibule	Number:	117	Quantity:	1		
Room:	Stair Vestibule	Number:	119, 120	Quantity:	1 each		
Room:	Lobby 1 st Floor	Number:	111	Quantity:	3		
Room:	Common Area 2nd	Number:	211, 216	Quantity:	1 each		
Room:	Common Area 3rd	Number:	311, 316	Quantity:	1 each		
Estimated or Actual Freight Charges:							
Total Quantity:	28	Item Price:	0.00	Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	L-12						
Item Description:	Exit Signs						
Model No.:	LX W G 120 EL N						
Color/Finish:	White housing, green panel						
Manufacturer:	Lithonia Lighting						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	64mm x 292mm x 200mm				
Room:	Corridor	Number:	108, 208, 308	Quantity:	1 per floor		
Room:	Corridor	Number:	110, 210, 310	Quantity:	1 per floor		
Room:	Stairwell	Number:	107	Quantity:	1 per floor		
Room:	Stairwell	Number:	109	Quantity:	1 per floor		
Room:	Mechanical Room	Number:	112	Quantity:	1		
Room:	Lobby 1 st Floor	Number:	111	Quantity:	3		
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	2		
Room:	Common Area 3 rd Floor	Number:	316	Quantity:	2		
Estimated or Actual Freight Charges:							
Total Quantity:	16	Item Price:	0.00	Total:			
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-1						
Item Description:	Washer						
Model No.:	GHW9100LW						
Color/Finish:	Dove Grey on White						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:					Expiration Date:		
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	800mm x 685.8mm x 965.2 mm				
Room:	Laundry Room 1 st Floor	Number:	113	Quantity:	2		
Room:	Laundry Room 2 nd Floor	Number:	213	Quantity:	2		
Room:	Laundry Room 3 rd Floor	Number:	313	Quantity:	2		
Estimated or Actual Freight Charges:							
Total Quantity:	6	Item Price:	999.00	Total:	\$5,994.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-2						
Item Description:	Dryer						
Model No.:	GEW9200LW						
Color/Finish:	Dove Grey on White						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	800mm x 685.8mm x 965.2 mm				
Room:	Laundry Room 1 st Floor	Number:	113	Quantity:	3		
Room:	Laundry Room 2 nd Floor	Number:	213	Quantity:	3		
Room:	Laundry Room 3 rd Floor	Number:	313	Quantity:	3		
Estimated or Actual Freight Charges:							
Total Quantity:	9	Item Price:	799.00	Total:	\$7,191.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-3						
Item Description:	Dishwasher						
Model No.:	DU850SWPQ						
Color/Finish:	White-on-white						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	610mm x 606.4mm x 860.4 mm				
Room:	Common Area Kitchen 2 nd Floor	Number:	211	Quantity:	1		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	1	Item Price:	269.00	Total:	\$269.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-4						
Item Description:	Microwave						
Model No.:	MT4145SKQ						
Color/Finish:	White-on-white						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	438.2mm x 555.6mm x 320.7mm				
Room:	SNCO Module Kitchens	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	1 per module (x 12 modules)		
Room:	JNCO Module Kitchens	Number:	105, 106, 205, 206, 305, 306	Quantity:	1 per module (x 6 modules)		
Room:	Common Area Kitchen 2 nd Floor	Number:	211	Quantity:	1		
Estimated or Actual Freight Charges:							
Total Quantity:	19	Item Price:	139.00	Total:	\$2,641.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-5						
Item Description:	Range (with oven below)						
Model No.:	RF368LXPQ						
Color/Finish:	White-on-white						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:					Expiration Date:		
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	630.2mm x 758.8mm x 1190.6mm				
Room:	Common Area Kitchen 2 nd Floor	Number:	211	Quantity:	1		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	1	Item Price:	599.00	Total:	\$599.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-6						
Item Description:	Range Hood						
Model No.:	GZ5730XLQ						
Color/Finish:	White-on-white						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	508mm x 758.8mm x 184.15mm				
Room:	Common Area Kitchen 2 nd Floor	Number:	211	Quantity:	1		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	1	Item Price:	0.00	Total:	\$0.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-7						
Item Description:	Refrigerator						
Model No.:	GR9SHKXMQ						
Color/Finish:	White-on-white						
Manufacturer:	Whirlpool						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	800mm x 1479.5mm x 749.3mm				
		Height w/Hinge Cap:	1663.7mm				
Room:	SNCO Module Kitchens	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	1 per module (x 12 modules)		
Room:	JNCO Module Kitchens	Number:	105, 106, 205, 206, 305, 306	Quantity:	1 per module (x 6 modules)		
Room:	Common Area Kitchen 2 nd Floor	Number:	211	Quantity:	1		
Estimated or Actual Freight Charges:							
Total Quantity:	19	Item Price:	819.00	Total:	\$15,561.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-8						
Item Description:	Vending Machine						
Model No.:	FM3000 Combination Soda and Snack						
Color/Finish:	Silver/Black Metal, double glazed door						
Manufacturer:	Wittenborg						
Source/Dealer:	ISS InterFurn						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:	290 kg approx.	Dimensions:	890mm x 850mm x 1830mm				
Room:	Lobby 1st Floor	Number:	111	Quantity:	1		
Room:	Common Area Kitchen 2 nd Floor	Number:	216	Quantity:	1		
Room:	Common Area Kitchen 3 rd Floor	Number:	316	Quantity:	1		
Estimated or Actual Freight Charges:							
Total Quantity:	3	Item Price:	5,800.00	Total:	\$17,400.00		
Special Instructions:	10 drums, 24 compartments per drum. Drums at varying heights to allow for a variety of items in machine.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-9						
Item Description:	Smoking Station						
Model No.:	T30						
Color/Finish:	Lacquered Beech Wood/Glass						
Manufacturer:	Smoke Free Systems						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	800mm x 1530mm x 2130mm				
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	1		
Room:	Common Area 3 rd Floor	Number:	316	Quantity:	1		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	2	Item Price:	0.00	Total:	\$0.00		
Special Instructions:	Wooden frame, lacquered beech wood and glass. Filtration cabinet placed on the right side, open side toward the room. Can be made movable with a "relocation kit" if desired.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	E-10						
Item Description:	Smoking Station						
Model No.:	T50						
Color/Finish:	Lacquered Beech Wood/Glass						
Manufacturer:	Smoke Free Systems						
Source/Dealer:							
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	800mm x 2120mm x 2130mm				
Room:	Lobby 1 st Floor	Number:	111	Quantity:	1		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	1	Item Price:	0.00	Total:	\$0.00		
Special Instructions:	Wooden frame, lacquered beech wood and glass. Filtration cabinet placed on the left side.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-1						
Item Description:	Aluminum Blinds (SNCO / JNCO / Stairwells / Vestibules)						
Model No.:	Lightlines 1"						
Color/Finish:	268 Crème de la Crème						
Manufacturer:	Hunter Douglas						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Inside Window Dimensions: 1200mm x 1200mm							
Room:	SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	4 per module (x 12 modules)		
Room:	JNCO Module Bedrooms	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:	Stairwells	Number:	107, 109, 207, 209, 307, 309	Quantity:	1 per room		
Room:	Vestibule	Number:	119, 120	Quantity:	1 per room		
Estimated or Actual Freight Charges:							
Total Quantity:	80	Item Price:	33.50	Total:	\$2,680.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-2						
Item Description:	Aluminum Blinds (COMMON AREAS small windows)						
Model No.:	Lightlines 1"						
Color/Finish:	018 Satin Sliver						
Manufacturer:	Hunter Douglas						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Inside Window Dimensions: 1200mm x 1200mm							
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	2		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	2	Item Price:	33.50	Total:	\$67.00		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-3						
Item Description:	Aluminum Blinds (COMMON AREAS large windows)						
Model No.:	Lightlines 1"						
Color/Finish:	018 Satin Sliver						
Manufacturer:	Hunter Douglas						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Inside Window Dimensions: 1500mm x 1500mm							
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	1		
Room:	Common Area 3rd Floor	Number:	316	Quantity:	1		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	2	Item Price:	38.35	Total:	\$76.70		
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-4						
Item Description:	Rolldown Shades (SNCO / JNCO / COMMON AREAS small windows)						
Model No.:	Blackout Premiere						
Color/Finish:	see material						
Manufacturer:	Vimco						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	Fabric/Material	Number:	UF-7	Price:		Quantity:	
Manufacturer:	Vimco						
Pattern:	BM-623-0						
Color:	Sahel						
Width:	54" (137cm)						
Repeat:	No Repeat						
Content:	100% FR Polyester						
Inside Window Dimensions: 1500mm x 1500mm							
Room:	SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	4 per module (x 12 modules)		
Room:	JNCO Module Bedrooms	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	2		
Estimated or Actual Freight Charges:							
Total Quantity:	74	Item Price:	174.00	Total:	\$12,876.00		
Special Instructions:	100% Blackout						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-5						
Item Description:	Rolldown Shades (COMMON AREAS large windows)						
Model No.:	Blackout Premiere						
Color/Finish:	see material						
Manufacturer:	Vimco						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	Fabric/Material	Number:	UF-7	Price:		Quantity:	
Manufacturer:	Vimco						
Pattern:	BM-623-0						
Color:	Sahel						
Inside Window Dimensions: 1500mm x 1500mm							
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	1		
Room:	Common Area 3 rd Floor	Number:	316	Quantity:	1		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	2	Item Price:	219.00	Total:	\$438.00		
Special Instructions:	100% Blackout						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-6						
Item Description:	Draperies (SNCO / JNCO / COMMON AREAS small windows)						
Model No.:	Blackout						
Color/Finish:	see material						
Manufacturer:	Casson Art						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G			Expiration Date:	31-Mar-09		
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	Fabric/Material	Number:	UF-6	Price:		Quantity:	
Manufacturer:	Fabricut						
Pattern:	Exquisite-L						
Color:	Wedgewood						
Width:	54" (137cm)						
Repeat:	No Repeat						
Content:	100% FR Polyester; Inherently Flame Retardent; Passes NFPA 701						
Inside Window Dimensions: 1500mm x 1500mm							
Room:	SNCO Module Bedrooms 1, 2 & Living Rooms 1, 2	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	4 per module (x 12 modules)		
Room:	JNCO Module Bedrooms	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	2		
Estimated or Actual Freight Charges:							
Total Quantity:	74	Item Price:	0.00	Total:	\$0.00		
Special Instructions:	Outside mount; hang 150mm below window; triple pass blackout lining; pinch pleated, double fullness; 100mm double heading; 100mm double hem; all fabrics must be stain/fire retardent; includes rods.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	LN-7						
Item Description:	Draperies (COMMON AREAS large windows)						
Model No.:	Blackout						
Color/Finish:	see material						
Manufacturer:	Casson Art						
Source/Dealer:	Casson Art						
GSA Contract No.:	GS-03F-7033G				Expiration Date:	31-Mar-09	
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	Fabric/Material	Number:	UF-6	Price:		Quantity:	
Manufacturer:	Fabricut						
Pattern:	Exquisite-L						
Color:	Wedgewood						
Width:	54" (137cm)						
Repeat:	No Repeat						
Content:	100% FR Polyester; Inherently Flame Retardent; Passes NFPA 701						
Inside Window Dimensions: 1500mm x 1500mm							
Room:	Common Area 2 nd Floor	Number:	216	Quantity:	1		
Room:	Common Area 3 rd Floor	Number:	316	Quantity:	1		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	2	Item Price:	113.20	Total:	\$226.40		
Special Instructions:	Outside mount; hang 150mm below window; triple pass blackout lining; pinch pleated, double fullness; 100mm double heading; 100mm double hem; all fabrics must be stain/fire retardent; includes rods.						
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	H-6						
Item Description:	Shower Curtain Rod						
Model No.:	1405176-5						
Color/Finish:	Stainless Steel						
Manufacturer:	American Hotel Register						
Source/Dealer:	American Hotel Register						
GSA Contract No.:	GS-07F-0294K			Expiration Date:	30-Apr-05		
FSC Group:				SIN #:	852 3		
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	5'				
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	H-7						
Item Description:	Adjustable Shower Head						
Model No.:	Vario Shower Set 75824						
Color/Finish:	Chrome						
Manufacturer:	Damixa						
Source/Dealer:	Damixa						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:					
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	H-8						
Item Description:	Toilet Paper Holder						
Model No.:	48307						
Color/Finish:	Chrome						
Manufacturer:	Damixa						
Source/Dealer:	Damixa						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:					
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	H-9						
Item Description:	Robe Hook						
Model No.:	48306						
Color/Finish:	Chrome						
Manufacturer:	Damixa						
Source/Dealer:	Damixa						
GSA Contract No.:					Expiration Date:		
FSC Group:					SIN #:		
FSC Part, Sect.:					MOL Amount:		
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:					
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	2 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	4 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	48	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

ORDER DATA SHEET							
Item Number:	H-10						
Item Description:	Towel Bars						
Model No.:	48304						
Color/Finish:	Chrome						
Manufacturer:	Damixa						
Source/Dealer:	Damixa						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:					
Room:	SNCO Module Bathroom	Number:	101, 102, 103, 104, 201, 202, 203, 204, 301, 302, 303, 304	Quantity:	4 per module (x 12 modules)		
Room:	JNCO Module Bathroom	Number:	105, 106, 205, 206, 305, 306	Quantity:	8 per module (x 6 modules)		
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	96	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

BAKER AND ASSOCIATES
ARCHITECTS ENGINEERS PLANNERS
NOVEMBER 2004

ORDER DATA SHEET

SID/CID 100% SUBMISSION

FY05 REPLACE DORMITORY
THULE AIR BASE, GREENLAND
CONTRACT NO.: F41622-02-D-0009

ORDER DATA SHEET							
Item Number:	H-11						
Item Description:	Coat Hooks (Vestibules)						
Model No.:	2187						
Color/Finish:	Bright Blue						
Manufacturer:	Peter Pepper Products						
Source/Dealer:	Peter Pepper Products						
GSA Contract No.:				Expiration Date:			
FSC Group:				SIN #:			
FSC Part, Sect.:				MOL Amount:			
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Component:		Number:		Price:		Quantity:	
Fabric Name:	N/A	Number:		Price:		Quantity:	
Manufacturer:	N/A						
Pattern:	N/A						
Color:	N/A						
Weight:		Dimensions:	57.1mm x 812.8mm x 63.5mm				
Room:	Vestibule	Number:	117, 119, 120	Quantity:	2 each		
Room:		Number:		Quantity:			
Room:		Number:		Quantity:			
Estimated or Actual Freight Charges:							
Total Quantity:	6	Item Price:	0.00	Total:	\$0.00		
Cost included in Construction Cost Estimate							
Special Instructions:							
Justification:	Part of complete CID Package						

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3.8 CUT SHEETS

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Intended Use

Suitable for accent lighting when more light is needed in a centralized area. Ideal for bathrooms, utility areas and stairwells.

Features

Faux marble or plain white end caps.

Allows for vertical or horizontal mounting.

Diffuser is either white acrylic or clear fluted with white acrylic ends. All models

have one-piece end cap and diffuser.

Spring retention on diffuser.

UL Listed (standard). CSA Certified (consult factory).

Standard with residential grade electronic ballast

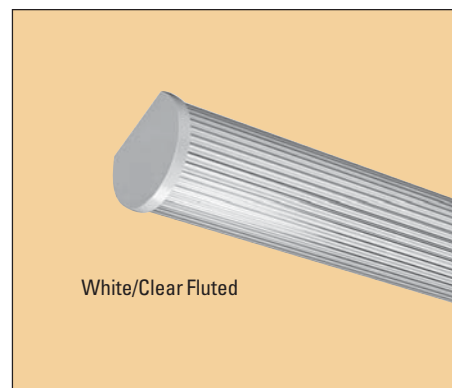
L-3



Black Marble



Solid White



White/Clear Fluted

Vanity Wall Brackets

Narrow Band

Ordering Information

Example: 11928 WH CI

Model number	Ballast	Lamp type ¹	Finish ³	Voltage	Options
<u>Narrow band ends</u> 11928 2-foot unit 11929 3-foot unit 11930 4-foot unit	(blank) (Ballast is specified in Options) RE Residential grade electronic T8 (standard). ²	(blank) 17W T8 (24") or 25W T8 (36") or 32W T8 (48")	WH White FMB Black Marble	(blank) 120V 277 277V 347 347V	See page 165 for ballasts and other options and accessories.
<u>White/clear fluted</u> 11931 2-foot unit 11932 3-foot unit 11933 4-foot unit					

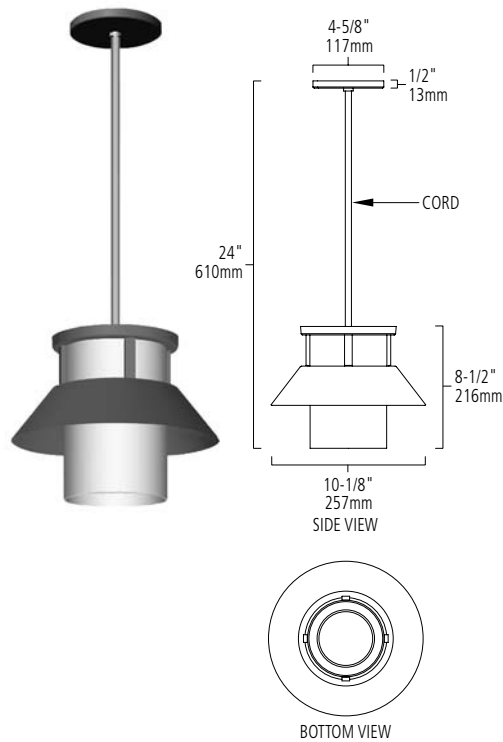
Availability and Dimensions

Nominal Size	Model Number	Finish	Number of Lamps	Width in.(cm)	Depth in.(cm)	Length in.(cm)
2'	11928 11931	WH, FMB WH	2	4 ¹ / ₈ (10.5)	4 ⁷ / ₈ (12.4)	25 ⁵ / ₈ (65.0)
3'	11929 11932	WH, FMB WH	2	4 ¹ / ₈ (10.5)	4 ⁷ / ₈ (12.4)	25 ⁵ / ₈ (65.0)
4'	11930 11933	WH, FMB WH	2	4 ¹ / ₈ (10.5)	4 ⁷ / ₈ (12.4)	25 ⁵ / ₈ (65.0)

NOTES:

- Lamps not included.**
- RE fixtures use 32W T8 lamps. No designation for Lamp Type is required in the catalog number.
- Not available with White Fluted.

FLARE: CP3848



INCANDESCENT CORD SUSPENDED PENDANT

Model ①	Lamping ②	Finish ③	Cord ④
CP3848	50PAR30 50 watt, PAR30 medium base*	BA Brushed Solid Aluminum BB Brushed Solid Brass BU Brushed Solid Copper PT Painted (specify color)	BC Black suspension cord WC White suspension cord

VOLTAGE:
120V

***NOTE:**
Suitable for 60W maximum incandescent lamp:
A19, K19, R20, PAR20, or PAR30

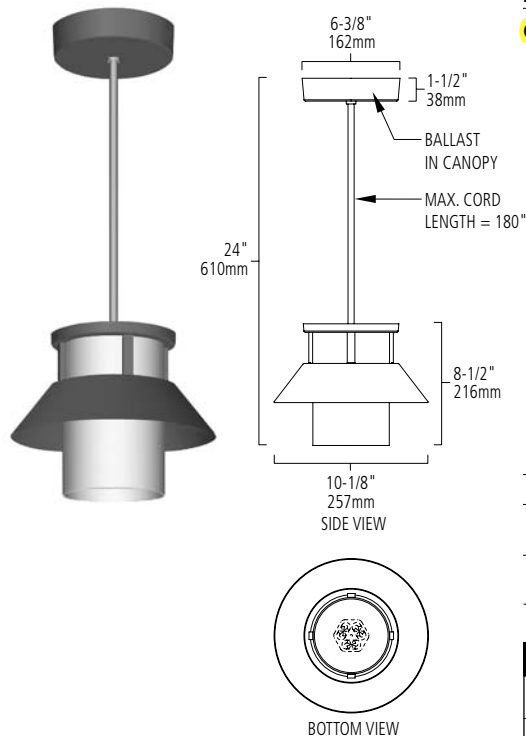
Diffuser	White acrylic.
Painted Finishes	EPA compliant oven-cured low VOC lacquer in 39 standard colors. See 2002/2003 catalog or Materials and Finishes brochure for color selection.
Metal Finishes	Solid aluminum, brass, or copper. See 2002/2003 catalog or Materials and Finishes brochure.
Mounting	Surface mounts to a 4" octagonal electrical junction box (by others).

Sample Catalog Number

CP3848	-	50PAR30(120V)	-	BU	-	WC
① Model		② Lamping (Voltage)		③ Finish		④ Suspension Cord

L-4

FLARE: CP3850



FLUORESCENT CORD SUSPENDED PENDANT

Model ①	Lamping ②	Finish ③	Cord ④
CP3850	1TF26 26 watt triple, 4-pin GX24q-3 base 1TF32 32 watt triple, 4-pin GX24q-3 base 1TF42 42 watt triple, 4-pin GX24q-4 base	BA Brushed Solid Aluminum BB Brushed Solid Brass BU Brushed Solid Copper PT Painted (specify color)	BC Black suspension cord WC White suspension cord

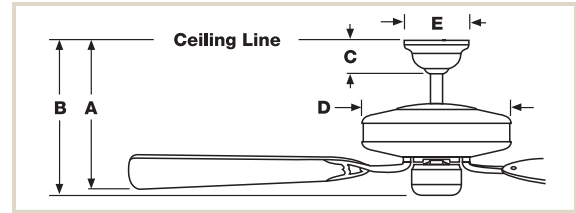
VOLTAGE:
120V
277V

Diffuser	White acrylic.
Ballast	Integral, high power factor, electronic, 120V or 277V, 26, 32, or 42 watt lamp operation.
Painted Finishes	EPA compliant oven-cured low VOC lacquer in 39 standard colors. See 2002/2003 catalog or Materials and Finishes brochure for color selection.
Metal Finishes	Solid aluminum, brass, or copper. See 2002/2003 catalog or Materials and Finishes brochure.
Mounting	Surface mounts to a 4" octagonal electrical junction box (by others).

Sample Catalog Number

CP3850	-	1TF32(120V)	-	BU	-	WC
① Model		② Lamping (Voltage)		③ Finish		④ Suspension Cord

PRODUCT SPECIFICATIONS



L-5

SERIES	Dimensions					Blade Sweep		Blade	Weight	Speed	Power	Motor	Tech [†]	Warranty
	A	B	C	D	E	LONG	SHORT	Pitch	Lbs.	RPM	(watts)	Size		(Motor)
Aegean Classic	16.25	24*	4	15.5	5.6	52"	44"	15°	36	70-215	10-84	188mm x 20mm	V•T / V•T2	Lifetime
Bel Air	9.25	14*	3	12.25	5.6	55"	—	14°	24	25-150	22-110	XLP2000 - 28mm	A•T / I•T / I•T2	Lifetime
Bel Air Halo	13.25	18.5*	3	15.5	5.6	55"	—	14°	24	25-150	22-110	XLP2000 - 28mm	I•T / I•T2	Lifetime
Bella	14.5	17.5*	3	16.1	5.6	52"	44"	15°	30	70-215	10-84	188mm x 20mm	V•T2	Lifetime
Bella Uplight	14.5	16	3	16.1	5.6	52"	44"	15°	27	70-215	10-84	188mm x 20mm	V•T2	Lifetime
Brescia Gallery	11.3	16.5*	3	14	5.6	52"	—	15°	32	35-185	8-108	XLP2000 - 28mm	A•T / I•T / I•T2	Lifetime
Brescia	11.3	12.6	3	14	5.6	52"	44"	15°	27	35-185	8-108	XLP2000 - 28mm	I•T / 3-S / W-52	Lifetime
Campana	12.2	13.5	3	12.4	5.6	53"	45"	16°	22	70-215	10-84	188mm x 20mm	V•T2 / 3-S / W-52	Lifetime
Capistrano	11.1	12.75	3	12.6	5.6	53"	45"	16°	24	70-215	10-84	188mm x 20mm	V•T2 / 3-S / W-52	Lifetime
Cathay	11	16.25*	3	13.9	7.7	56"	—	14°	36	35-160	32-94	XLP2100 - 33mm	I•T	Lifetime
Commodore	15	17.5	3	9	5.6	52"	—	14°	25	40-190	7-110	XLP2000 - 28mm	3-S / W-52	Lifetime
Concentra	11	12.75	3	11.5	5.6	50"	42"	16°	20	45-200	21-86	188mm x 20mm	V•T2 / 3-S / W-52	Lifetime
Estrada	13	13.75	3	12	5.6	52"	44"	15°	25	65-203	21-86	188mm x 20mm	3-S / W-52	30 Years
Four Seasons III	10.75	12.75	3	11.5	5.6	52"	42"	13°	14	50-200	25-80	172mm x 12mm	3-S / W-52	Lifetime
Four Seasons III Hugger	7	8	N/A	11	5.6	52"	42"	13°	11	50-200	25-85	172mm x 12mm	3-S	Lifetime
Four Seasons III Outsider	10.75	12.75	3	11.5	5.6	52"	—	13°	17	50-200	20-80	172mm x 12mm	3-S / W-52	30 Years
Kawayan	17.5	22.2*	3	16	5.6	52"	—	15°	40	70-215	10-84	188mm x 20mm	V•T2	Lifetime
Key Largo	13.3	12.3	3	13.3	5.6	52"	42"	15°	30	70-215	10-84	188mm x 20mm	V•T2	Lifetime
Lanai	11.1	12.75	3	12.6	5.6	53"	45"	16°	25	70-215	10-84	188mm x 20mm	3-S / W-52	30 Years
le Grande	11.96	16.23	3	8.69	5.6	62"	—	14°	27	53-165	14-84	188mm x 20mm	V•T2	Lifetime
Malibu Star	21	23	3	6.25	5.6	84"	—	15°	19	6-45	7-103	XLP2000 - 28mm	3-S / W-80 / W-52	Lifetime
Marrakesh	9.25	14.3	4	19.75	5.6	62"	—	14°	40	53-165	14-84	188mm x 20mm	V•T2	Lifetime
Metropolitan	12	12.2	3	12	5.6	52"	44"	15°	25	35-185	8-108	XLP2000 - 28mm	I•T	Lifetime
Mission Fan	11	15.4*	3	13.9	7.7	56"	—	14°	36	35-160	32-94	XLP2100 - 33mm	I•T	Lifetime
Mission Table Lamp	17 L	17 W	23 H	N/A	N/A	N/A	N/A	N/A	29	N/A	N/A	N/A	N/A	N/A
Mission Floor Lamp	17 L	17 W	66 H	N/A	N/A	N/A	N/A	N/A	49	N/A	N/A	N/A	N/A	N/A
Mission Wall Sconce	14 L	7 W	12 H	N/A	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A
Moderne Table Fan	21.1 H	17.6 W	13 D	N/A	N/A	14.5"	N/A	N/A	24	600-1200	58-75	N/A	3-Speeds	Lifetime
New Orleans	26	28	3	13	5.6	54"	46"	15°	36	35-185	8-108	XLP2000 - 28mm	3-S / W-52	Lifetime
19th Century	22	20.5	6.75	10.5	5.6	54"	—	14°	35	40-190	7-110	XLP2000 - 28mm	I•T	Lifetime
Nouvelle	17.9	19.5	4	12.3	5.6	54"	—	14°	36	25-150	32-94	XLP2100 - 33mm	I•T	Lifetime
Panama XLP	10.75	12.75	3	12	5.6	50"	42"	15°	20	40-190	8-108	XLP2000 - 28mm	A•T / I•T / I•T2 / 3-S / W-52	Lifetime
Panama XTR	10.75	12.75	3	12	5.6	50"	42"	20°	27	40-170	14-84	200mm x 20mm	I•T2 / 4-S / W-52	Lifetime
Panama Damp XLP	10.75	12.75	3	12	5.6	50"	42"	15°	20	40-190	8-108	XLP2000 - 28mm	3-S / W-52	30 Years
Panama Damp XTR	10.75	12.75	3	12	5.6	50"	42"	20°	27	40-170	14-84	200mm x 20mm	4-S / W-52	30 Years
S3	9.8	14*	3	10.2	7.7	54"	—	15°	23	50-180	21-86	188mm x 20mm	V•T	Lifetime
Stealth	10.75	13.25*	3	11.5	5.6	53"	—	14°	33	25-200	31-112	XLP2000 - 28mm	A•T / I•T / I•T2	Lifetime
Utopian	10.7	12.22	3	11.2	5.6	50"	40"	16°	25	55-200	7-83	172mm x 20mm	3-S / W-52	30 Years
Ventura	11	12.5	3	10.25	5.6	—	42"	16°	19	63-283	7-106	XLP2000 - 28mm	I•T / 3-S / W-52	Lifetime
Verrazano	22.5	25.5*	3	9.5	7.7	54"	—	14°	32	45-175	11-105	XLP2000 - 28mm	3-S / W-1811 / W-52	Lifetime
Victorian	11.5	13.5	3	13	5.6	54"	46"	15°	23	35-185	8-108	XLP2000 - 28mm	I•T	Lifetime
Wailea	11	11.54	3	9.5	5.6	32"	—	25°	17	90-275	25-80	153mm x 20mm	3-S / W-52	30 Years
Wilderness	16	15.6	3	11.8	5.6	52"	42"	15°	50	70-215	10-84	188mm x 20mm	V•T2	Lifetime
Zephair Table Fan	21 H	17 W	11 D	N/A	N/A	14.5"	N/A	N/A	24	600-1200	58-75	N/A	3-Speeds	Lifetime
Zephair Floor Fan	54 H	18 W	11 D	N/A	N/A	14.5"	N/A	N/A	50	600-1200	58-75	N/A	3-Speeds	Lifetime
Zephair Desk Fan	16.5 H	12.5 W	8 D	N/A	N/A	10.44"	N/A	N/A	20	710-1310	58-75	N/A	3-Speeds	Lifetime

* Dimension B with * = measurement including Light Fixture and Glass.
Dimension B without * = measurement to bottom of Switch Housing.

[†] Tech (Fan Controls): A•T = Advan•Touch V•T = Versa•Touch V•T2 = Versa•Touch 2 I•T = Intelli•Touch 3-S = Three Speed 4-S = Four Speed
(W-52 Adapt•Touch Option adds Remote Control Operation)

NOTE: All fans, light fixtures and wall controls are listed by Underwriters Laboratories, and/or Edison Testing Laboratories. All blades must be a minimum of 18" from the wall. In the interest of continual product improvement, we reserve the right to alter details without notice to conform to regulations, availability of materials, improve designs or discontinue models. 120VAC, 60HZ rate 0.9 Amp.



FEATURES & SPECIFICATIONS

INTENDED USE

Recessed housing rated IC or Non-IC. For new construction only.
Approved for all ceiling and wiring types. Sold in resale pack of (6) only.

CONSTRUCTION

Air-Tight standard. Tested to meet current energy codes.
Aluminum housing.
Galvanized steel pan.

Galvanized bar hangers span up to 24" o.c. and feature built in nailer and integral T-bar clips. Two locking screws hold fixture in position.
Galvanized steel junction box with four built-in Romex clamps; five ½" and two ¾" nominal knockouts with slots for pryout. Rated for through branch wiring.

Maximum 4 (2 in, 2 out) No 12 AWG conductors. Rated for 90° C.

Ground wire provided.

Removable J-box doors for easy access.

ELECTRICAL SYSTEM

Durable medium base porcelain socket with nickel plated copper alloy screw shell and contact.

Socket clips to top of housing to prevent paint overspray in socket screw shell.

Socket attaches to reflector to ensure proper and consistent lamp position.

Thermal protection provided against improper lamp usage.

120 volts only.

INSTALLATION

Air-Tight applications (refer to installation instructions for compliance to codes).

2 x 8 wood joist or T-bar installation.

Expandable bar hangers allow for off center mounting in wood joist or T-bar ceilings.

Length of 25¼" maximum 13¼" minimum or cut to fit 9" on center joist construction.

Vertical adjustment of housing allows for flush mounting with ceiling face.

Ceiling cutout 7".

Maximum ceiling adjustment 1".

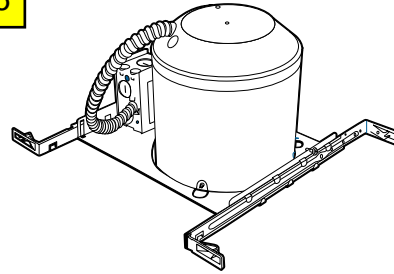
LISTING

U.L. Listed to U.S. and Canadian safety standards.

Damp location listing. (See trim selection for wet location listing).

Catalog Number	
Notes	Type

L-6



6" Housing

L7X

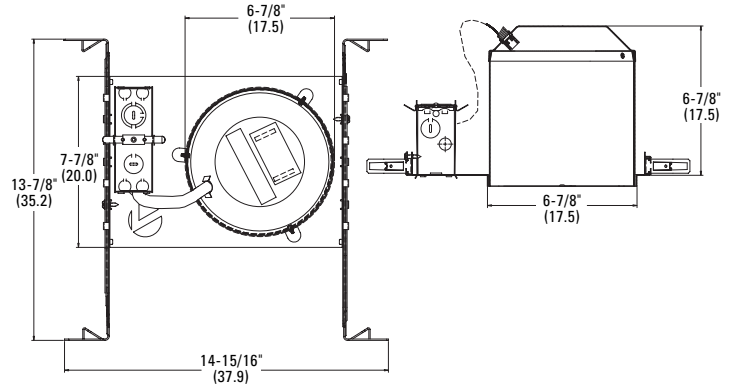
INCANDESCENT
IC/Non-IC
New Construction

Specifications

Height: 6-7/8 (17.48)

Length: 15 (38.1)

Width: 13-7/8 (35.24)



All dimensions are inches (centimeters).

ORDERING INFORMATION

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog number.












Example: **L7X R6**

L7X	
Series	Options
L7X	Shipped installed in fixture PHC Poke-home wire connectors.

NOTE:

See trim summary on reverse side for maximum wattages.

7 & 6 Series 6" Incandescent L7X Full Reflector Trims

Description Catalog number	Maximum wattage Sheet number	Description Catalog number	Maximum wattage Sheet number	Description Catalog number	Maximum wattage Sheet number	Description Catalog number	Maximum wattage Sheet number
General/Task				Accent/Adjustable			
Open Wide Flange 601 601PB White Polished Brass	65 BR30 75 PAR30	Baffle Wide Flange 6B1 6B1W Black 6B1PB White 6B1BL/PB Polished Brass 6B1PB/PB Black/Polished Brass Polished Brass	40 A19 65 BR30 75 PAR30	Eyeball Narrow Flange 6E1 6E1PB White Polished Brass	65 BR30 75 PAR30	Wallwash Narrow Flange 6W1 White	60 A19
IC/Non-IC	ROPN-100			IC/Non-IC	RADJ-100	Non-IC	RWLL-100
Open Narrow Flange 602 602A White 602G Clear Specular 602SA Gold Specular 602SG Clear Diffuse Gold Diffuse	100 A19 120 BR40 150 PAR38	IC/Non-IC	RBAF-100	Baffled Eyeball Narrow Flange 6E2 6E2W Black 6E2PB White 6E2SB Polished Brass Satin Brass	65 BR30 75 PAR30	Baffled Wallwash Narrow Flange 6W2 6W2W Black White	100 A19
		Baffle Narrow Flange 6B2 Black 6B2W White 6B2BL/PB Black/Polished Brass	L-6.1 65 BR30 75 PAR30/38	IC/Non-IC	RADJ-110	Non-IC	RWLL-110
Non-IC	ROPN-110			Regressed Eyeball Narrow Flange 6RE1 6RE1W Black 6RE1BL/PB White 6RE1PB/PB Black/Polished Brass Polished Brass	65 BR30 75 PAR30	Wallwash Narrow Flange 7W1 White	60 A19
Open Narrow Flange 603 603A White 603G Clear Specular Gold Specular	100 A19 120 BR40 150 PAR38	IC/Non-IC	RBAF-110	IC/Non-IC	RADJ-120	Non-IC	RWLL-140
		Baffle Narrow Flange 6B3 Black 6B3W White 6B4 Black 6B4W White	100 A19 120 BR40 150 PAR38	Baffle Regressed Eyeball Narrow Flange 6RE2 6RE2W Black 6RE2BL/PB White 6RE2PB/PB Black/Polished Brass Polished Brass	65 BR30 75 PAR30	Pinhole Narrow Flange 6S1 White	60 A19 65 BR30 50 R20/PAR20
Non-IC	ROPN-130			IC/Non-IC	RADJ-130	Non-IC	RWLL-130
Open Cone Narrow Flange 6C3A Clear Specular 6C3BL Black Specular 6C3G Gold Specular	100 A19 120 BR40 150 PAR38	Non-IC	RBAF-120	Eyeball Wide Flange 7E1 White	65 BR30 75 PAR30	Lens/Wet Location	
		Baffle Narrow Flange 7B2 Black 7B2W White	65 BR30 75 PAR30	IC/Non-IC	RADJ-160	WETlite™ 6H20 White	75 PAR38
Non-IC	ROPN-140			Regressed Eyeball Wide Flange 7RE1 White	65 BR30 50 PAR30	IC/Non IC	RLNS-115
Open Narrow Flange 702 702A White 702G Clear Diffuse 702AZ Gold Diffuse 702BLZ Clear Specular 702GZ Black Specular Gold Specular	65 BR30 75 PAR30	IC/Non-IC	RBAF-170	Baffle Adjustable Narrow Flange 6AB1 Black 6AB1W White	65 BR30 75 PAR30	Shower/Closet Lens Narrow Flange 6LD1 Drop Opal Plastic* 6LD2 Drop Prismatic Plastic* 6LF1 Flush Opal Plastic* 6LF2 Flush Prismatic Plastic*	L-6.2
		Baffle Wide Flange 7B3 Black 7B3W White	65 BR30 75 PAR30	IC/Non-IC	RADJ-170	Non-IC	RLNS-100
IC/Non-IC	ROPN-180			Baffle Narrow Flange 7B5 Black 7B5W White	120 BR40 150 PAR38	Glass Lens Narrow Flange 6LD3 Drop Opal White Splay 6LDB3 Drop Opal Black Baffle 6LF3 Flush White White Splay 6LFB3 Flush White Black Baffle 6L4 Fresnel White Splay 6L4B Fresnel Black Baffle	75 A19
Open Wide Flange 703 White	65 BR30 75 PAR30	Non-IC	RBAF-190	Non-IC	RADJ-140	Non-IC	RLNS-100
		Open Narrow Flange 705 705A White 705G Clear Diffuse 705AZ Gold Diffuse 705BLZ Clear Specular 705GZ Black Specular Gold Specular	120 BR40 120 PAR38	Cone Adjustable Narrow Flange 6AC1A Clear Specular 6AC1BL Black Specular 6AC1G Gold Specular	65 BR30 75 PAR30	Shower/Closet Lens Narrow Flange 7LD1 Drop Opal Metal Flange 7LD1PF Drop Opal Plastic* 7LD2PF Drop Prismatic Plastic*	40 A19
IC/Non-IC	ROPN-190			Non-IC	RADJ-140	IC	RLNS-140
Non-IC	ROPN-200						

NOTES:

- 1 Maximum wattage listed. Lower wattage lamps may be used.
- 2 Lens trims and WETlites™ are wet location listed. All others are damp location.
- 3 Shallow trims may be used for lower lamp position. See C & 7 Series Trims.

* For plastic flange add suffix PF

Lithonia Lighting

Acuity Lighting Group, Inc.

Recessed Downlighting

One Lithonia Way, Conyers, GA 30012

Phone: 800-315-4935 Fax: 770-860-3106

In Canada: 160 avenue Labrosse, Point-Claire, P.Q., H9R 1A1

www.lithonia.com

Xenon

NEW

Ordering Information

Low-Profile Xenon Fixture

Intended Use

For use where accent light is needed. Ideal for cabinet lighting in kitchens, offices and bookcases.

Features

Cool operation with clean, bright, white illumination.

White or bronze finish.

12V Xenon bulb(s) included.

Standard direct-wire (poke-home connectors included) or plug-in (5' corded plug included).

High/low switch for optimum light output.

13" connector cord included, so more fixtures can be added anytime.

Available in resale packs of 6.

UL listed to US and Canadian standards.

Example: **UCX 2 120 CSW BZ R6**

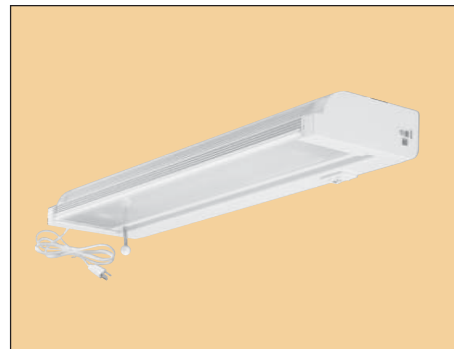
Length	Model Number ¹		Lamps (included)	Packaged ²
Xenon	White finish	Bronze finish		
9"	UCX 1 120 CSW R6	UCX 1 120 CSW BZ R6	1-18W 12V Xenon	6
12"	UCX 2 120 CSW R6	UCX 2 120 CSW BZ R6	2-18W 12V Xenon	6
18"	UCX 3 120 CSW R6	UCX 3 120 CSW BZ R6	3-18W 12V Xenon	6
24"	UCX 4 120 CSW R6	UCX 4 120 CSW BZ R6	4-18W 12V Xenon	6

NOTES:

1 Lamps included.

2 Resale packs must be ordered in increments of 6.

Halogen

L-7

Swivel Halogen Fixture

Intended Use

For use when accent light is needed. Ideal for cabinet lighting in kitchens, office and bookcases.

Features

Fixture head rotates 20° backward and 45° forward to aim light where needed.

White or bronze finish.

25W G8 halogen bulb(s) included.

Standard direct-wire (poke-home connectors included) or plug-in (5' corded plug included).

High/low switch for optimum light output.

13" connector cord included, so more fixtures can be added anytime.

Crisp, white light and quiet operation.

Resale package of 6.

UL listed to US and Canadian standards.

Example: **UCHD 2 120 CSW R6**

Ordering Information

Length	Model Number ¹		Lamps (included)	Packaged ²
Halogen	White finish	Bronze finish		
6"	UCHD 1 120 CSW R6	UCHD 1 120 CSW BZ R6	1-20W G8 Halogen	6
12"	UCHD 2 120 CSW R6	UCHD 2 120 CSW BZ R6	2-20W G8 Halogen	6
18"	UCHD 3 120 CSW R6	UCHD 3 120 CSW BZ R6	3-20W G8 Halogen	6
24"	UCHD 4 120 CSW R6	UCHD 4 120 CSW BZ R6	4-20W G8 Halogen	6

NOTES:

1 Lamps included.

2 Resale packs must be ordered in increments of 6.

Intended Use

Use in surface or suspended applications such as retail, manufacturing or renovation where high light levels in a compact luminaire design are required.

Features

Compact, low-profile design. High fixture performance.

Extended-height end caps for socket support. Full end cap available.

High-gloss baked white enamel or galvanized finish.

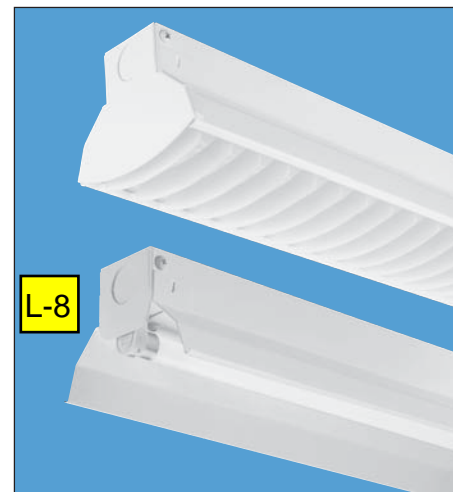
Choice of 1 or 2 lamps in 2', 3', 4' or 8' lengths.

Available reflectors include white, specular or galvanized finishes in solid or perforated styles.

White straight blade louver available for applications requiring additional shielding and cutoff.

Aircraft cable mounting hardware available.

Listings – UL Listed (standard). CSA Certified (see Options).



Ordering Information

Example: **MS5 1 54T5HO SMR MVOLT GEB10PS**

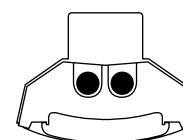
Series	Lamp type	Configuration	Finish	Voltage	Options
MS5 For tandem double-length unit, add prefix T1. Example: TMS5	14T5 14W T5 (22") 21T5 21W T5 ((34")) 24T5HO 24W T5 HO (22") 28T5 28W T5 (46") 39T5HO 39W T5 HO ((34")) 54T5HO 54W T5 HO (46")	(blank) No reflector ASMR Asymmetric reflector SMR Symmetric reflector SBL White straight blade louver assembly (solid, white reflectors included) ^{1, 2}	(blank) White SAR95 Specular aluminum reflector-Miro® (white channel) GALV Galvanized	347³ MVOLT* Others available. * 120-277V. Must specify GEB10PS.	GEB10PS Electronic ballast, ≤10% THD, program start GLR Internal fast-blow fuse ⁴ GMF Internal slow-blow fuse ⁴ PLF_G Plug-in wiring, specify 1, 2, or 3 branch circuits and hot wires (A=black, B=red, C=blue, AB or AC) EL55 Emergency battery pack (nominal 390-700 lumens) ^{1,4,5} CSA CSA Certified
Number of lamps 1, 2 Not included.					
Accessories		(Order separately)			
See page 98 for others.					

NOTES:

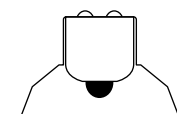
- Only available on 28W and 54W.
- Finish and reflector type not applicable.
- Available with 54T5HO lamp type only.
- Specify voltage.
- Not available in Canada.
- Not for use in combination with reflector.
- Available with 3', 4' and 8' lengths only.
- 120-277V only for power feed.
- Standard wire size for power feed is 18 gauge. For 12 gauge add **12AWG** to the end of catalog number. Consult factory for length of runs and required wire size.
- Based on SMR reflector.

Availability and Dimensions¹⁰

Nominal length	Series	Lamps per cross section	Lamps per fixture	Lamp type	Width in. (cm)	Depth in. (cm)	Length in. (cm)
2'	MS5	1, 2	1, 2	14T5, 24T5HO	4¾ (12.1)	2 ¹³ / ₁₆ (7.1)	22 ⁷ / ₁₆ (56.9)
3'	MS5	1, 2	1, 2	21T5, 39T5HO	4¾ (12.1)	2 ¹³ / ₁₆ (7.1)	34¾ (87)
4'	MS5	1, 2	1, 2	28T5, 54T5HO	4¾ (12.1)	2 ¹³ / ₁₆ (7.1)	46 ¹ / ₁₆ (116.9)
8'	MS5	1, 2	2, 4	28T5, 54T5HO	4¾ (12.1)	2 ¹³ / ₁₆ (7.1)	92 ¹ / ₁₆ (233.7)



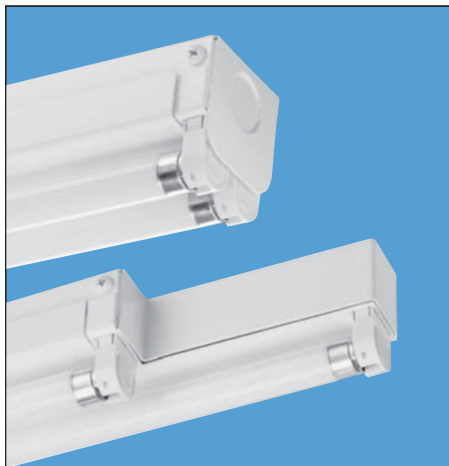
MS5 SBL



MS5 SMR

MS5

L-9



Low-Profile T5 Direct

Intended Use

Use for coves, display or any application requiring a low-profile luminaire that provides high light levels. Ideal for commercial, retail or manufacturing.

Features

Compact, low-profile design. High fixture performance.

Available in standard or staggered channels. Staggered design includes 4" stagger for uninterrupted continuous illumination.

Extended-height end caps for socket support.

High-gloss baked white enamel or galvanized finish. Heavy-duty 20-gauge channel.

Choice of 1 or 2 lamps in 2', 3', 4' or 8' lengths.

Listings – UL Listed (standard). CSA Certified (see Options).

Ordering Information

Example: **MS5 1 54T5HO MVOLT GEB10PS**

Series	Number of lamps	Lamp type	Voltage	Options
MS5 Standard channel	1,2	14T5 14W T5 (22")	347²	GEB10PS Electronic ballast, ≤10% THD, program start
MS5SS Staggered channel	Not included.	21T5 21W T5 (34")	MVOLT*	GLR Internal fast-blow fuse ³
For tandem double-length unit, add prefix T.1 Example: TMS5		24T5HO 24W T5 HO (22")	Others available.	GMF Internal slow-blow fuse ³
		28T5 28W T5 (46")	* 120-277V. Must specify GEB10PS.	PLF_G Plug-in wiring, specify 1, 2, or 3 branch circuits and hot wires (A =black, B =red, C =blue, AB or AC)
		39T5HO 39W T5 HO (34")		EL55 Emergency battery pack (nominal 390-700 lumens) ^{3,4}
		54T5HO 54W T5 HO (46")		CSA CSA Certified

See page 98 for others.

Accessories (Order separately)

WGMS5Z	Wireguard, 4', Zinc.
THMS5	Tong hanger (1 pair).
1B	Ceiling spacer (adjusts 1-1/2" to 2-1/2" from ceiling)
SQ_	Swivel stem hanger (specify length in 2" increments).
MS5SSASR 2 48	Asymmetric reflector for staggered, 4', two-lamp configuration. ^{1,6}
MS5SSASR 1 48	Asymmetric reflector for staggered, 4', one-lamp configuration. ⁶

NOTES:

- Only available on 28W and 54W.
- Available with 54T5HO lamp type only.
- Specify voltage.
- Not available in Canada.
- For other lengths, replace 48 with correct length required; nominal 2' = 24, 3' = 36. Two reflectors required for 8' lengths.



MS5

Availability and Dimensions

Nominal length	Series	Lamps per cross section	Lamps per fixture	Lamp type	Width in. (cm)	Depth in. (cm)	Length in. (cm)
2'	MS5SS MS5	1, 2	1, 2	14T5, 24T5HO	2 (5.1)	2 1/4 (5.7)	22 1/2 (57.1), 26 1/2 (67.3) 22 7/16 (56.9)
3'	MS5SS MS5	1, 2	1, 2	21T5, 39T5HO	2 (5.1)	2 1/4 (5.7)	34 1/4 (87), 38 1/4 (97.1) 34 1/4 (87)
4'	MS5SS MS5	1, 2	1, 2	28T5, 54T5HO	2 (5.1)	2 1/4 (5.7)	46 1/16 (117), 50 1/16 (127.2) 46 1/16 (117)
8'	MS5SS MS5	1, 2 1, 2	1, 2 2, 4	28T5, 54T5HO	2 (5.1)	2 1/4 (5.7)	88 1/16 (223.7), 96 1/16 (243.8) 92 1/16 (233.7)

FEATURES

OPTICAL SYSTEM

- Architectural surface-mount design using perforated metal diffuser over 1/8" thick white acrylic shield.
- Top and bottom prongs, cast in acrylic, hold diffuser in place.
- Diffuser is open top and bottom for direct and indirect illumination.
- ADA compliant.

SHIELDING OPTIONS

- Metal Diffuser, staggered Round holes (MDR). 52% open perforated steel with .075" diameter holes.
- Metal Diffuser, aligned Mini slots (MDM). 46% open perforated aluminum with .045" x .250" straight slots.

ELECTRICAL SYSTEM

- Thermally-protected, Class P, LPF, electromagnetic ballasts are standard for two-pin lamps.
- Class P thermally-protected high power factor electronic ballast are standard for four-pin lamps. (THD < 10%, PF .99).

HOUSING

- Housing formed from cold-rolled steel.
- Five-stage iron-phosphate pretreatment ensures superior paint adhesion and rust resistance. Painted parts finished with high-gloss, baked white enamel.

LISTING

- UL Listed and labeled. Listed and labeled to comply with Canadian and Mexican Standards (see options).

Specifications subject to change without notice.

Type

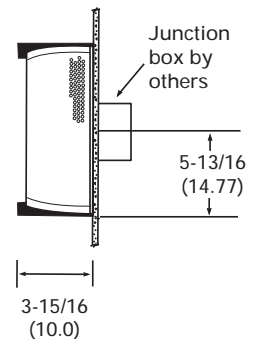
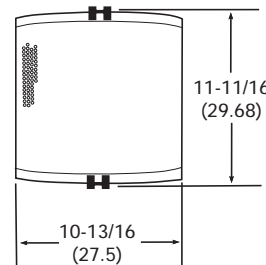
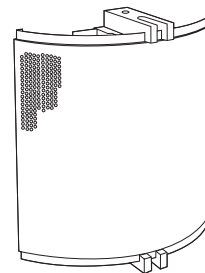
Catalog number

Wall Sconce

L-10

Perforated Shield

Compact Fluorescent
2 lamps



Avante
Recessed Direct/Indirect Lighting

ORDERING INFORMATION

Example: AVSP 26DTT MDR MVOLT GEB10

AVSP	2					
Series	Number of Lamps	Lamp type ¹	Diffuser	Voltage	Ballast	Options
AVSP	2	13TT 13W twin-tube 13DTT 13W quad-tube 26DTT 26W quad-tube	MDR Metal diffuser, round holes. MDM Metal diffuser, mini slots.	120 277 347 MVOLT ²	EMB Electromagnetic ballast. Requires two-pin lamp. (Not available as MVOLT) GEB10 Electronic ballast, ≤10% THD. Requires four-pin lamp. (13DTT and 26DTT only.)	ALB Anodized aluminum back plate. CSA Listed and labeled to comply with Canadian Standards. NOM Listed and labeled to comply with Mexican Standards. GLR Single fast-blow fuse (not available with MVOLT). GMF Single slow-blow fuse (not available with MVOLT). ELR Remote emergency battery pack. Remote test switch provided.

Notes:

- 13TT for two-pin lamp only; others for two or four-pin lamp.
- Will operate any voltage between 120V and 277V (50Hz and 60Hz). Available with GEB10 ballast only.

Additional options available.
Consult factory.

Intended Use

Provides a minimum of 90 minutes of illumination for the rated wattage upon loss of AC power. Ideal for applications requiring attractive unit equipment with quick installation.

Features

White, compact low profile contemporary design with high-impact thermoplastic housing that is impact-resistant, scratch-proof, corrosion-proof, UV-stable to resist discoloration from artificial light sources or sunlight.

Maintenance-free lead-calcium battery.

Two 5.4W wedge-based krypton lamps (ELM/ELM2) offer 32 percent more light output than standard incandescent lamps.

Patent-pending MR24, multi-faceted reflector (ELM2) significantly improves photometric performance - 60 to 100 percent more light delivered to the path of egress.

Dual-voltage input capability (120/277V)
Edge connectors on printed circuit board ensure long-term durability.

Unique track-and-swivel arrangement permits full range of direction of lamp head adjustment (except ELM). Universal J-box mounting pattern. Tool-less access for maintenance. Flexible conduit entry provision on top of the unit.

Quick-Mount® snap-together construction permits installation in three easy steps in less than three minutes. (ELM/ELM2)

Vandal-resistant ELA VS (ELM/ELM2) and ELA VS2 (6ELM2/P,ELM4,ELM10) polycarbonate shield available.

Wall or ceiling mounted. (ELM/ELM2)

Quantum Series 6ELM2P, ELM4 and ELM10 will power a variety of remote devices up to rated wattage of fixture.

Listings – UL Listed. NOM Certified/ (see options).

Quantum®

ELM/ELM2

6ELM2/ELM4/ELM10

Quick-Mount®

L-11



Ordering Information

Example: **6ELM2 SSB AM**

Option	Descriptions
SD	Self-diagnostics
B	Black housing
N	Maintenance-free nickel-cadmium batteries
RO	Less lamp heads
H	8W halogen lamps
SSB	Square sealed-beam lamp heads
TD	Integral time delay (12V only)
DL	Damp location
CSR	8-foot cordset attached (120V ELM only)
NOM	NOM Certified

Catalog Number	DL	SD	B	N	RO	H	SSB	TD	CSR	NOM	Cat. No.	Watt/Lamp
ELM	■								■	■	MR24 K0606	5.4
ELM2	■	■	■ ¹							■	MR24 K0606	5.4
6ELM2			■	■	■	■	■			■	CDS N0806	7.2
6ELM2P			■	■	■	■	■			■	CDS N0806	7.2
ELM4		■ ²	■	■	■	■	■			■	CDS N1212	12
ELM10			■	■	■	■	■			■	CDS N1212	12

NOTES:

- 1 Black ELM2 not available with damp location option.
- 2 SD option not available with N, AM, VM, LD or HC.

For additional lamp heads, remote fixtures, options and accessories, see pages 319-321.

For application guidelines and fixture performance data, see pages 344-351.

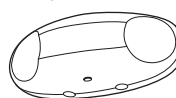
ELM/ELM2 Quick-Mount Installation:

- 1) Feed leads through mounting plate and make connections to AC power supply.
- 2) Align mounting plate on J-box and secure with screws.
- 3) Connect battery and snap housing onto mounting plate.

Drawings are for dimensional detail only and may not represent actual mechanical configuration. Dimensions are shown in **inches (millimeters)** unless otherwise noted.

ELM

Width: 11-1/2 (292)
Depth: 8-1/2 (25)
Height: 5 (127)
Weight: 3.0 lbs. (1.4 kgs.)



ELM2

Width: 12-1/2 (317)
Depth: 3-3/4 (95)
Height: 5 (127)
Weight: 4.0 lbs. (1.8 kgs.)



6ELM2/6ELM2P

Width: 16-1/4 (413)
Depth: 5-3/8 (137)
Height: 5 (128)
Weight:
6ELM2: 7.5 lbs. (3.4 kgs.)
6ELM2P: 7.5 lbs. (3.4 kgs.)



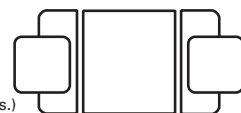
ELM4

Width: 18-1/2 (470)
Depth: 6-1/4 (158)
Height: 7-1/2 (191)
Weight: 13 lbs. (5.9 kgs.)



ELM10

Width: 17-3/4 (451)
Depth: 7-1/4 (184)
Height: 8-7/8 (225)
Weight: 29.5 lbs. (13.4 kgs.)



Electrical Application Data									
	AC Input			Output		Output Watts			
	Volts	Amps	Watts	Volts		1½ hrs	2 hrs	3 hrs	4 hrs
ELM	120 277	.11 .12	1.2 1.5	6		12	—	—	—
ELM2	120 277	.11 .12	1.2 1.5	6		12	—	—	—
6ELM2	120 277	.167 .072	20 20	6		16	12	8	6
6ELM2P	120 277	.167 .072	20 20	6		24	18	12	9
ELM4	120 277	.250 .108	30 30	12		50	37	25	18
ELM10	120 277	.250 .108	30 30	12		125	93	62	46

Die-Formed Steel Exits

Intended Use

Suitable for applications requiring heavy duty steel exit signage such as a light industrial warehouse or manufacturing facility.

Features

Heavy-gauge, die-formed steel housing. Impact-resistant color panels.

Knockout chevrons for choice of direction. Long-life LEDs feature very low energy consumption and rated life up to 25 years. Universal mounting — top, back or end (canopy included).

Listings – UL Listed. NOM Certified.

Ordering Information

Example: **LX S W 1 R 120/277 EL N**

Family	Face type	Number of faces
LX LED	S Stencil P Panel¹	1 Single 3 Single with extra faceplate and color panel
Housing color		
(blank) Matte black		
W White		

Panel color	Operation
R Red G Green	(blank) Standard non-emergency EL N Nickel-cadmium battery
Input voltage	
120/277 Dual voltage	

Accessories ²	(Order separately)
ELA B US12	12" stem kit with black canopy.

NOTES:

- Special wording available on panel face; consult factory.
- For additional accessories see page 307.

Dimensions are shown in **inches (millimeters)** unless otherwise noted.

LED



STANDARD/EMERGENCY

Width: 11-1/2 (292)
Height: 7-7/8 (200)
Depth: 2-1/2 (64)
(Add 7/8 (22) for canopy)
Weight: 5 lbs. (2.2 kgs.)

Exit Signs
Titan[®]
LED

L-12



Options	Certification
For additional options and fixture compatibility, see page 307.	(blank) NOM UL Listed NOM Certified

Electrical Application Data

Primary Circuit Type	Volts	Amps	Watts
Standard	120	.04	.57
LED red	277	.05	.68
Standard	120	.05	.62
LED green	277	.05	.72
Emergency	120	.04	.72
LED red	277	.05	.92
Emergency	120	.04	.72
LED green	277	.05	.92

Self-Luminous Exits

Intended Use

Ideal for applications where electrical power cannot be provided.

Features

Tritium-filled gas tubes require no electrical input and are rated for 10 or 20-year life.

Universal directional indicators and mounting (canopy included).

Completely sealed housing.

Explosion-proof/hazardous location. Suitable for wet locations.

Tamperproof mounting hardware included.

10 or 20-year total customer warranty (varies with luminous life option chosen).

Listings – UL Listed.

Ordering Information

Example: **D S W 1 R**

Family	Number of faces	Faceplate color	Luminous life	Options
D Self-luminous	1 Single 2 Double	R Red G Green	(blank) 10 years 20 20 years	VR Vandal shield^{1,2,4} AA Aluminum anodized frame³ IF Institutional frame⁴
Face type				
S Stencil				
Housing color				
(blank) Black				
W White				
AL Aluminum				

NOTES:

- Only available in single face.
- Only available with aluminum housing color.
- Available in all housing colors.
- Consult factory for dimensional details.

Self-Luminous



Dimensions are shown in **inches (millimeters)** unless otherwise noted.

Plastic Frame	Option AA (Aluminum Anodized)
EXIT	EXIT
TOP MOUNTING	END MOUNTING
SINGLE FACE	SINGLE FACE
DOUBLE FACE	DOUBLE FACE
Width: 14-3/16 (360) Height: 9-5/8 (244) Depth: Single - 1-1/2 (38) Double - 3 (76) Weight: Single - 3 lbs. (1.4 kgs.) Double - 6 lbs. (2.8 kgs.)	Width: 12-3/4 (324) Height: 8-1/4 (209) Depth: Single - 1-1/2 (38) Double - 2-11/16 (68) Weight: Single - 4 lbs. (1.8 kgs.) Double - 8 lbs. (3.6 kgs.) (Canopy provided with double face only)


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GHW9100L



The Whirlpool® Duet® Washer is big enough to clean 16 pairs of jeans in a single load. That means you save time washing multiple loads. It easily handles large, bulky items, too, so you can clean blankets and comforters in the convenience of your own laundry room.

Dove Grey on White

Model: GHW9100LW

MSRP: **\$999.00**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

ENERGY STAR® Qualified

Ultra Capacity Plus

67% Energy Savings vs. Traditional Top Loader

68% Water Savings vs. Traditional Top Loader

Save up to \$150 in Utility Bills per Year (Water & Electricity)

AccuWash™ Temperature Control

Quiet Wash Plus

Stainless Steel Wash Basket with Limited Lifetime Warranty

6-Point Self-Leveling System

Multiple Cycles

Variable End-of-Cycle Signal

Add-A-Garment Indicator

3 Wash/Rinse Temperature Combinations

On/Off Extra Rinse Option

3-Tray Dispenser

Multiple Wash/Spin Speed Combinations

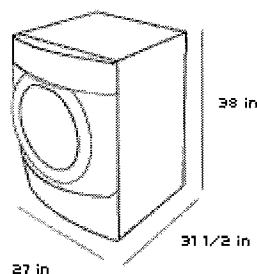
Automatic Water Level Settings

900 RPM Maximum Spin Speed

Variable-Speed Motor

Optional Pedestal Drawer For Easy Loading/Unloading

Stackable



Dimensions

Depth: 31 1/2 in.

Height: 38 in.

Width: 27 in.

Electrical Requirements

15 OR 20 Ampere, 120 Volts, 60 Hertz (1/second). GROUNDED CIRCUIT IS REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

Appearance

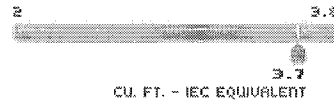
Matching Dryer

Capacity

Capacity (Size): 3.7 CUBIC FOOT-IEC EQUIVALENT

Capacity (Weight): 22

Capacity



Construction

Front Access

Stackable

Stainless Steel Tub

Whirlpool Customer Support

For shopping assistance call 1-800-253-1301

Controls

AccuWash™ - Temp. Control System

Electronic Controls

Dimensions

Depth: 31 1/2 in.

Height: 38 in.

Maximum Height: 38 in.

Overall Depth: 31 1/2 in.

Width: 27 in.

Performance

NONE Agitator

Bleach Dispenser

Catalyst®

MULTIPLE Cycles

Delicate Cycle

Variable End-of-Cycle Signal

ENERGY STAR® Qualified

Extra Rinse Option

Fabric Softener Dispenser

Handwashable Cycle

Heavy Duty Cycle

Lint Filter

1/2 HP Motor

Prewash Cycle

Soak Cycle

Quiet Wash Plus Sound Package

Sound Reduction

3 Temperature Settings

Triple Dispenser

Catalyst® Wash System

MULTIPLE Wash/Spin Speeds

AUTOMATIC Water Level Selections

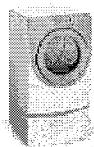
Warranty

One Year Full Parts & Labor Warranty

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GEW9200L

Dove Grey on White

Model: GEW9200LW

MSRP: **\$799.00**

Pewter

Model: GEW9200LL

MSRP: **\$799.00**

Biscuit-on-Biscuit

Model: GEW9200LT

MSRP: **\$799.00**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

Super 7.0 Cu. Ft. Capacity Plus Drum

Senseon™ Drying System

Dry Times = Wash Times up to 15 lbs. (Regular Wash/Heavy Duty Dry)

Quick Dry Cycle

Wrinkle Shield™ Plus Feature (120 Minutes)

Quiet Dry Plus Sound Insulation

Dry Rack

Fully Reversible Wide Opening Door with Window

Extra Large Front-Mounted Lint Screen

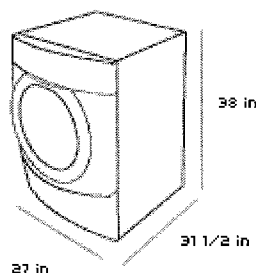
Interior Drum Light

4-Way Venting Option

Porcelain SpillGuard™ Top

Optional Pedestal Drawer For Easy Loading/Unloading

Stackable



Dimensions

Depth: 31 1/2 in.

Height: 38 in.

Width: 27 in.

Electrical Requirements

30 Ampere, 120/240 Volts, 60 Hertz (1/second). AC-ONLY. USE COPPER WIRE ONLY. A FOUR-WIRE OR THREE-WIRE, SINGLE PHASE ELECTRICAL SUPPLY REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

Appearance

Matching Washer

Porcelain Top and Lid

Capacity

Capacity (Size): 7.0 Cubic foot

Capacity



Whirlpool Customer Support

For shopping assistance call 1-800-253-1301

Construction

Front Access

Reversible Wide-Opening Door Style

DuraWhite™ Drum Material

Dry Rack

Extra Large Front Mount Lint Screen

Power Cord & Venting Accessories

Stackable

Controls

Electronic Controls

Dimensions

Depth with Open Door: 51 1/2 in.

Depth: 31 1/2 in.

Height: 38 in.

Maximum Height: 0 in.

Width: 27 in.

Performance

Auto Dry Control

Cool Down Cycle

10 Cycles

Damp Dry

Delicate Cycle

Drum Light

Electronic Sensor Drying

Variable End-of-Cycle Signal

Extended Tumbling Cycle

Extra Dry Cycle

Interior Light

1/3 HP Motor

Electric Power

Quiet Dry Plus Sound Package

Senseon™ Drying System Temperature Control

5 Temperature Settings

Wrinkle Free Cycle

Wrinkle Guard Cycle

Warranty

One Year Full Parts & Labor Warranty

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DU850SWP



Get dishes their cleanest. The high temperature boost option on this large capacity dishwasher helps wash water reach the optimal temperature.

Black-on-Black

Model: DU850SWPB

MSRP: **\$249.00**

White-on-White

Model: DU850SWPQ

MSRP: **\$269.00**

Black-on-Stainless

Model: DU850SWPS

MSRP: **\$349.00**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

ENERGY STAR® Qualified

New Look!

Large Capacity

3 Level Wash

DuraWash™ System

Sound Blanket

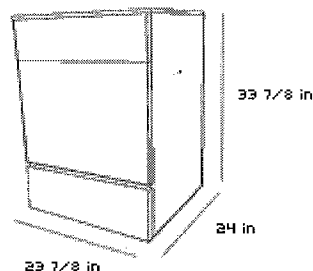
4 Automatic Cycles

3 Options

High Temp Boost Option

3 Hour Delay

Large Silverware Basket



Dimensions

Depth: 24 in.
Height: 33 7/8 in.
Width: 23 7/8 in.

Electrical Requirements

15 OR 20 Ampere, 120 Volts, 60 Hertz (1/second). AC - DIRECT COPPER WIRE ONLY. FUSED ELECTRICAL SUPPLY IS REQUIRED. TIME-DELAY FUSE OR CIRCUIT BREAKER IS RECOMMENDED.

SPECIFICATIONS

Appearance

6 Inch Console Styling

Custom Panels

Undercounter Dishwasher

Trim Kit Available

Place Settings



Capacity

10 PLACE SETTINGS Capacity

Whirlpool Customer Support

For shopping assistance call 1-800-253-1301

Construction

Frameless Design

PVC Rack Material

High Side Rack System

Large In-the-Rack Silverware Basket

Plastic Tub

Controls

Electromechanical Controls

Dimensions

Depth: 24 in.

Height: 33 7/8 in.

Maximum Undercounter Height: 0 in.

Minimum Undercounter Height: 34 in.

Width: 23 7/8 in.

Standard Size

Performance

POTS & PANS, HEAVY, NORMAL, RINSE ONLY Cycles

Number of Cycles: 4

Delay Wash

ENERGY STAR® Qualified

Soil Settler Filtering System

High Temp. Wash

3 Options

Rinse Aid Dispenser

Sound Insulation

Standard Sound Package

3 Spray Levels

Soil Settler Wash System

Warranty

One Year Full Parts & Labor Warranty

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MT4145SK

Black-on-Black
Model: MT4145SKB
MSRP: **See Dealer**

White-on-White
Model: MT4145SKQ
MSRP: **See Dealer**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

1.4 Cu. Ft. Capacity

1100 Watts Cooking Power

Maxwave™ Cooking System

Touch Control System

10-Level Variable Cooking Power Control

Staged Cooking

Sensor Cooking Cycles

Non-Sensor Reheat, Cook, Defrost Cycles

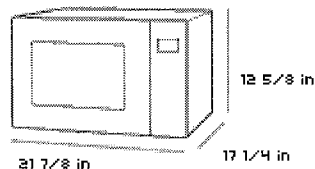
Jet Start™ Control - 30 Seconds

Warm Hold Cycle

Recessed Glass Turntable

Electronic Child Lockout Feature

Optional Trim Kits Available



Dimensions

Depth: 17 1/4 in.
Height: 12 5/8 in.
Width: 21 7/8 in.

Electrical Requirements

15 OR 20 Ampere, 120 Volts, 60 Hertz (1/second). AC-ONLY. FUSED ELECTRICAL SUPPLY IS REQUIRED. GROUNDED CIRCUIT IS REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

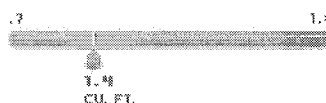
Appearance

Time of Day Clock

Capacity

Microwave Oven Capacity: 1.4 Cubic foot

Oven Capacity



Construction

6 Instant Cook Pads

Oven Window

Whirlpool Customer Support

For shopping assistance call 1-800-253-1301

.....
Turntable

Controls

Add Minute Pad

.....
Electronic Controls

Dimensions

Depth: 17 1/4 in.

.....
Height: 12 5/8 in.

.....
Width: 21 7/8 in.

Performance

Sensor Cooking

.....
Jet Start™

.....
Maximum Power: 1100

.....
Personal Choice Cycle

.....
Sensor Reheat, Defrost Cycles

.....
Sensor Cook

.....
Warm Hold Cycle

Warranty

One Year Full Parts & Labor Warranty

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RF368LXP

Black-on-Black
Model: RF368LXPB
MSRP: **\$599.00**

White-on-White
Model: RF368LXPQ
MSRP: **\$599.00**

Stainless Steel
Model: RF368LXPS
MSRP: **\$719.00**

Biscuit-on-Biscuit
Model: RF368LXPT
MSRP: **\$599.00**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

Super Capacity 4.65 Cu. Ft. Oven

2 Extra-Large 9 inch elements

Radiant Elements

AccuBake® Heat Distribution System

Upswept Ceramic Glass Cleantop® System

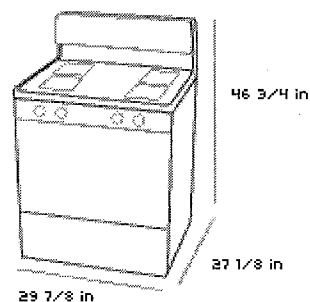
EZ-Touch™ 176 Electronic Oven, Timer, & Clock Controls

Delay Bake

Custom Broil

Extra-Large EasyView™ Window

Self-Cleaning Oven with Auto Latch



Dimensions

Depth: 29 1/8 in.
Height: 46 3/4 in.
Width: 29 7/8 in.

Electrical Requirements

40 Ampere, 120/240 Volts, 60 Hertz (1/second), AC-ONLY. USE COPPER WIRE ONLY. A FOUR-WIRE OR THREE-WIRE, SINGLE PHASE ELECTRICAL SUPPLY REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

Appearance

Glass Door Style

Freestanding Installation Design

Time of Day Clock

Oven Capacity



Capacity

4.65 Cubic foot Oven Capacity

Whirlpool Customer Support
For shopping assistance call 1-800-
253-1301

Construction

Burner Configuration: TWO 6 IN.; TWO 9 IN. RADIANT

High Upswept Porcelain Cooktop Style

Porcelain Cooktop Surface

2 Oven Racks

Oven Window

Controls

EZ-Touch™ 176 Controls

Dimensions

Depth: 27 1/8 in.

Height: 46 3/4 in.

Width: 29 7/8 in.

Extra Large Window Size

Performance

Custom Broil Broiler

Radiant Burners

Self-Cleaning

Delay Bake

Maximum Kwh: 2,500

Minimum Kwh: 1,200

Oven Light

Electric Power

Storage Drawer

AccuBake® Temperature Management

Safety

Control Lock Out Function

Warranty

One Year Full Parts & Labor Warranty

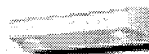
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GZ5730XL



Convert this hood to vent or recirculate. It is designed to conveniently fit the needs of your home's cooking space.

Black-on-Black

Model: GZ5730XLB

MSRP: **See Dealer**

White-on-White

Model: GZ5730XLQ

MSRP: **See Dealer**

Biscuit-on-Biscuit

Model: GZ5730XLT

MSRP: **See Dealer**

Stainless Steel

Model: GZ5730XLS

MSRP: **See Dealer**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

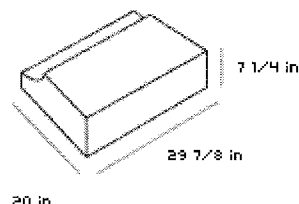
Features

2-Speed Rocker Switch Fan Control

Dual Halogen Oven Lighting

Easy-to-Remove Filters

Convertible to Non-Vented Operation (Re-circulation Kit Included)



Dimensions

Depth: 20 in.

Height: 7 1/4 in.

Width: 29 7/8 in.

Electrical Requirements

15 Ampere, 120 Volts, 60 Hertz (1/second). USE COPPER WIRE ONLY. GROUNDED CIRCUIT IS REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

Appearance

Convertible Hood

Maximum Exhaust Capacity

Capacity

Maximum Exhaust Capacity: 200 Cubic feet per minute



Construction

Blower

Charcoal Filter

Convertible Duct Type

Convertible Venting

Whirlpool Customer Support

For shopping assistance call 1-800-253-1301

Controls

Rocker Switch Controls

Up-Front Electronic Touch Control

Variable Speed and ON/OFF Controls

Dimensions

Depth: 20 in.

Duct Size: 7 IN. ROUND/10 IN. RECTANGULAR

Height: 7 1/4 in.

Width: 29 7/8 in.

Performance

Damper Included

2 Fan

Washable Filters

Warranty

One Year Full Parts & Labor Warranty

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GR9SHKXM



Rely on safe and efficient food storage. The Accu-Chill™ System provides accurate temperature control for storing food and beverages in both the fresh-food and the freezer compartments.

Black-on-Black

Model: GR9SHKXMB
MSRP: **\$869.00**

Stainless Steel

Model: GR9SHKXMS
MSRP: **\$1069.00**

White-on-White

Model: GR9SHKXMQ
MSRP: **\$839.00**

Biscuit-on-Biscuit

Model: GR9SHKXMT
MSRP: **\$869.00**

Prices shown are Manufacturer's Suggested Retail Price. Dealer alone determines actual price.

PRODUCT FEATURES

Features

ENERGY STAR® Qualified

Contoured Door Design

Dual Up-Front Temperature Control Knobs

Accu-Chill™ Temperature Management System

Slide-Out SpillGuard™ Glass Shelves

EZ-Vue™ Plus Humidity-Controlled Crispers

EZ-Vue™ Meat Pan

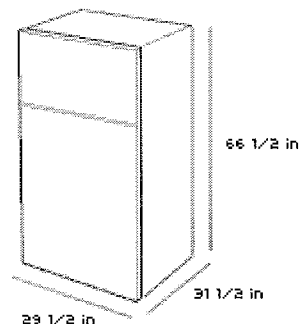
Flexi-Slide™ Utility Bin

EZ-Stor™ Plus Clear Gallon Door Bins

Flexi-Glide™ Pull-Out Freezer Floor

Freezer Light

Reversible Door Swing



Dimensions

Depth: 31 1/2 in.
Height: 66 1/2 in.
Width: 29 1/2 in.

Electrical Requirements

15 Ampere, 115 Volts, 60 Hertz (1/second). FUSED ELECTRICAL SUPPLY IS REQUIRED. GROUNDED CIRCUIT IS REQUIRED. A TIME-DELAY FUSE OR CIRCUIT BREAKER AND SEPARATE CIRCUIT IS RECOMMENDED.

SPECIFICATIONS

Appearance

Contour Door

Reversible Door

Capacity

Approximate Capacity: 19-20 Cubic foot

Total Capacity



.....
Approximate Capacity: 5 Cubic foot

.....
Refrigerator Compartment Capacity: 13.9 Cubic foot

.....
Total Capacity: 18.9 Cubic foot

Whirlpool Customer Support

For shopping assistance call 1-800-
253-1301

Construction

Accu-Chill™ Temperature Management

Controls

Up-Front Temperature Control

Dimensions

Cabinet Height: 65 1/2 in.

.....
Depth including Handles: 31 1/2 in.

.....
Depth with Door Open: 58 1/4 in.

.....
Depth with Door Open 90 Degrees: 58 1/4 in.

.....
Depth: 31 1/2 in.

.....
Height Including Hinge Cap: 66 1/4 in.

.....
Height: 66 1/2 in.

.....
Width: 29 1/2 in.

Performance

EZ-VUE™ PLUS HUMIDITY CONTROLLED Crisper

.....
Crispers

.....
Frost Free Defrost

.....
3 Door Shelves

.....
Dual Cooling

.....
Easy to Clean

.....
Egg Bin

.....
ENERGY STAR® Qualified

.....
Freezer Light

.....
ADJUSTABLE SHELF, ROLL-OUT FLOOR Freezer Storage

.....
4 Fresh Food Shelves

.....
FLEXI-STOR™ PLUS Gallon Door Bin

.....
Gallon Door Bins: 3

.....
Icemagic® Optional IceMaker

.....
Meat Pan

.....
EZ-Vue™ Meat Pan

.....
ADJUSTABLE SPILLGUARD™ SLIDE-OUT GLASS Shelving

.....
Without Ice Maker or Water Dispenser

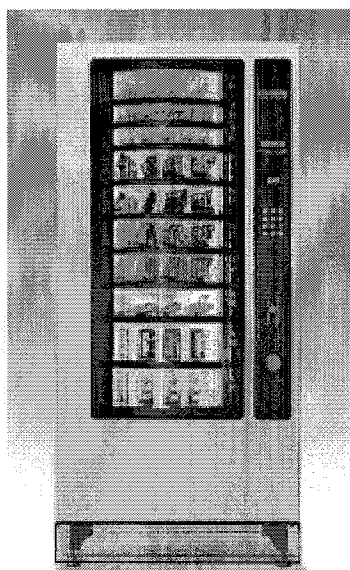
Warranty

One Year Full Parts & Labor & 5 Years Sealed System
Warranty

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FM 3000

WITTENBORG

TECHNICAL FEATURES

User interface	Direct selections
No. of drums	8 - 9 - 10
Drum Height:	50 - 90 - 130 mm
Number of compartments for disk	6 - 12 - 18 - 24 - 36
Capacity	From 48 to 360 products
Dispensing system	FIFO - Shopper
Min. preserving temperature	3°C
Communication protocol	Executive - BDV
Price per disk	1
Time periods per disk	2
Height	1830 mm
Width	850 mm
Depth	890 mm
Depth with door open	1580 mm
Weight	290 Kg Approx.



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Press

Smoke free in figures

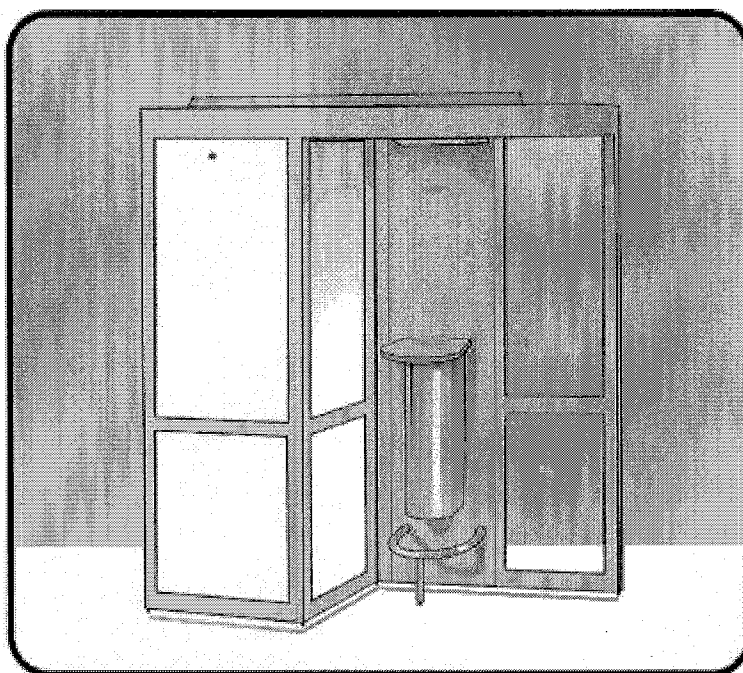
Smoke Free Systems only use filter systems that are optimised for the specific gases and particles present in tobacco smoke. The gas filter, of patented and registered design, provides the highest level of cleaning according to EU standard. The same applies to the particle filter.

The filter system is very effective. Measurements show that air has passed through the filter is clinically clean and contributes improved air quality in the room.

	Specifications	Notes
Capturing efficiency		
The air flow (The volume of air that is circulated through the system)	Both the high airflow and the aerodynamic extractions zone are very important functions for creating a completely smoke free solution.	
Model C40 and T50	600 m3/hour	Airflow
Model C60 and T70	850 m3/hour	Airflow
Purification efficiency		
Particle filtration	99,9995 % of the MPPS and 100% of other particle sizes.	MPPS= Most Penetrating Particle Size, w is most difficult particles to capture Filter class: U15 Filtration level according to standard EN1
Gas filtration	100 % Tobacco specific gases	Tobacco specific gases, such as Nicotine
Improves the Indoor Air Quality, IAQ	Yes	Several independent surveys are made
Ash handling systems	Patented and well proven	Collects all ashes and cigarette ends in a resistant way. Emptied and maintained by Smoke Free Systems
Power supply	230V/50Hz	Ordinary power outlet
Power rating	105W energy saving mode, 370W at full speed	



Model T30



Material: Wood

Width: 1530 mm

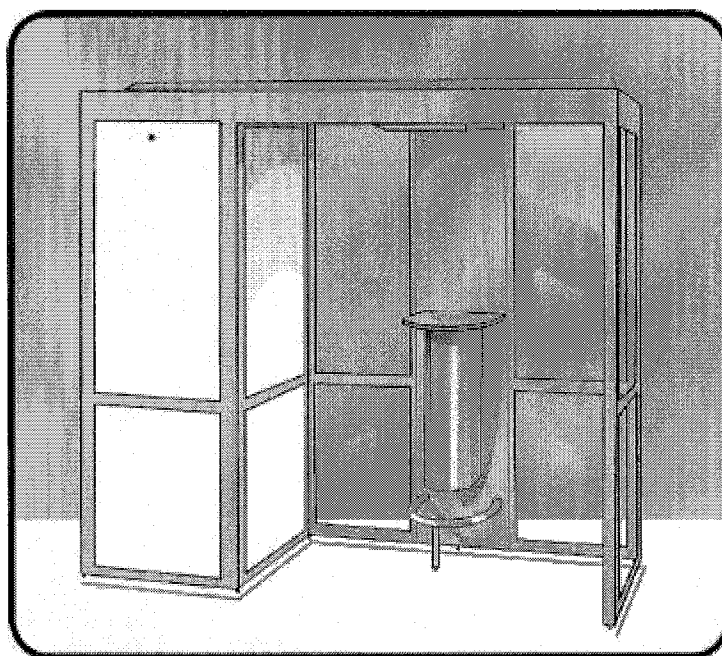
Depth: 800 mm

Height: 2130 mm

No. of smokers at one time: up to 2

Capacity: 750 cig./month, equivalent to approx. 5 regular users

Model T50



Material: Wood

Width: 2120 mm

Depth: 800 mm

Height: 2130 mm

No. of smokers at one time: up to 4

Capacity: 1500 cig./month, equivalent to approx. 10 regular users

3.9 MANUFACTURER SUMMARY LIST

- ▶ American Hotel Register
100 S. Milwaukee Ave.
Vernon Hills, IL 60061-4305
Phone: 847-564-4000
Fax: 847-743-2098

- ▶ Architex, Liz Jordan Hill (LJH)
Deborah De Santis
D_desantis@architex-ljh.com
Phone: 703-370-6126
3333 Commercial Ave.
Northbrook, IL 60062
Toll Free: 800-621-0827
Fax: 847-205-1510
www.architex-ljh.com

- ▶ Casablanca Fan Company
761 Corporate Center Drive
Pomona, CA 91768
Phone: 888-227-2178
www.casablancafanco.com

- ▶ Casson Art
Elizabeth Upadhyaya
14218 Chimney House Road
Midlothian, VA 23112
Phone: 804-744-3716
Fax: 804-744-8059

- ▶ C/S Acrovyn
Construction Specialties, Inc.
6696 Route 405 Highway
Muncy, Pennsylvania 17756
Phone: 800-233-8493
www.c-sgroup.com

- ▶ Collins & Aikman
Tandus
Greg Brunette
gbrunette@tandus.com
1206 30th Street, NW
Washington D.C. 20007
Phone: 202-471-4210
Fax: 202-471-4216
www.tandus.com

- ▶ Daltile
Jeff Eassa
jeff.eassa@daltile.com
7834 C.F. Hawn Frwy.
Dallas, TX 75217
Toll Free: 877-248-7277
Fax: 410-418-8186
<http://www.daltile.com>

- ▶ Damixa
damixa A/S
Østbirkvej 2
5240 Odense NØ
Phone: +45 63 10 22 10
Fax: +45 63 10 22 09
www.damixa.com

- ▶ Dupont Corian
Carapace LLC
Stephanie Hanson
shanson@carapacecorp.com
Phone: 301-256-3109
8705 Bollman Place
Savage, MD 20763
Phone : 301-256-3100
Toll Free : 800-928-4322
Fax: 301-256-3150
www.carapacecorp.com

- ▶ Fabricut Contract
Heather McCarty
Heather.mccarty@hmmarketing.com
Phone: 301-831-9520
Showroom:
2107 N. Hamilton Street
Richmond, Virginia 23230
Phone: 804-353-5224
Fax: 804-353-5161
1-800-999-8200

- ▶ HTH
HTH Køkkener A/S
Industrivej 6
DK-6870 Ølgod
Denmark
Phone: +45 7524 4777
www.hth.dk

- ▶ Hunter Douglas Contract Window Coverings
12400 Stowe Drive
Poway, CA 92064
Phone: 800-121-8953
Fax: 800-205-9819
www.hdcontract.com/windowcoverings

- ▶ IMC Framed Art and Mirrors
Tracy Hammond
tracy@imcframedart.com
Customer Care Manager
11400 Watterson Court
Louisville, Kentucky 40299
Phone: 502-267-1007
Fax: 502-267-7004
www.imcframedart.com

- ▶ International Fabrics, Inc.
919 Finch Ave.
P.O.Box 1448
High Point, NC 27261-1448
Phone: 800-334-7399
Fax: 336-841-5202
www.internationalfabrics.com

- ▶ ISS InterFurn A/S
Per Gjesing
Per.gjesing@interfurn.dk
Lysningen 2, Assentoft
8900 Randers
Phone: +49 87958899
Fax: +49 8648811

- ▶ Lithonia Lighting
P.O. Box A
Conyers, GA 30012
Phone: 770-922-9000
Fax: 770-483-2635
www.lithonia.com

- ▶ Maharam
Barbara Bailey
Washington, DC Showroom
Showroom
1255 23rd Street NW, Suite 100
Washington, DC 20037
Phone: 202.466.6386
Fax: 202.466.1134
www.maharam.com

- ▶ The Matworks
11900 Old Baltimore Pike
Beltsville, MD 20705
Phone: 800-523-5179
Fax: 301-595-0740
info@thematworks.com

- ▶ Pallas Textiles
Jennifer Lynn
703-960-4395
1330 Bellevue Street
Green Bay, WI 54302
Phone: 920-468-2661
Fax: 920-468-2661
Sample Dept.
Joan
Phone : 1-800-454-9796
Fax : 1-920-432-5254
www.pallastextiles.com

- ▶ Peter Pepper Products
McGrath & Company, Inc.
4905 Hampden Lane #16
Bethesda, MD 20814
Phone: 301-652-0084
Fax: 301-652-5114
mcgrathppp@aol.com
www.peterpepperproducts.com

- ▶ Pittsburgh Paints
PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272
Phone: 1-800-441-9695
Fax: 1-888-807-5123
www.pittsburghpaints.com

- ▶ Richmond Textiles
Scott Jordan International, Inc.
Ian Fruchtman
ian@scottjordaninc.com
Phone : 1-732-670-7373
1 Park Way, 3rd Floor
Upper Saddle River, NJ 07458
Phone: 201-760-6505
Fax: 201-995-0221
samples@richmondtextiles.com
www.richmondtextiles.com

- ▶ RJF International Corporation
Mike Lester
gmlester@verizon.net
Koroseal Wallcoverings Mid-Atlantic
4351 Garden City Drive, Suite 230
Landover, MD 20785
Phone: 703-629-5988
<http://korogard.com>

- ▶ Roppe Corporation
1602 North Union Street, Box 1158
Fostoria, OH 44830-1158
Toll Free: 1-800-537-9527
Phone: 419-435-8546
Fax: 419-435-1056
Samples: 1-877-SAMPLE-4
(1-877-726-7594)
<http://www.roppe.com>
sales@roppe.com
Local Distributor :
Stanley Stephens Co., Inc.
Suzanne B. Mcgarity
Toll Free: 1-800-458-5135
Phone: 1-800-523-5200 ext. 160
Fax: 410-647-1035
<http://www.sstfloor.com>
sbmccgarity@aol.com

- ▶ Smoke Free Systems
Smoke Care ApS
Bistrupvej 172
3460 Birkerød
Denmark
Phone: +45 7026 1127
SE/CVR 2601 2244
info@smokefreesystems.dk
www.smokefreesystems.com

- ▶ Tarkett
Chris Markward
chris.markward@tarkett.com
P.O. Box 606
Forest Hill, MD 21050
Phone: 800-877-8453 ext. 8256
Fax: 410-838-1095
www.tarkett.com

- ▶ USG
Derek Sanderson
dsanderson@usg.com
125 South Franklin
Chicago, IL 60606-4678
Phone: 312-606-4000
www.usg.com

- ▶ Vimco
Leonard's Draperies
10441 Rhode Island Avenue
Beltsville, MD 20705-2316
Phone: 301-441-2600
Fax: 301-220-3508

- ▶ Visa Lighting
1717 W. Civic Dr.
Milwaukee, WI 53209
Phone: 414.354.6600
Fax: 414.354.7436

- ▶ Whirlpool
Whirlpool Nordic A/S
Dynamovej 11
2730 Herlev
Telefon 44880222
Phone: 800-253-1301
www.whirlpool.com

- ▶ The Young Group
Design-Tec
Tom Moutrie
tmoutrie@theyounggroup.net
Phone: 1-800-331-3080 ext. 4925
1054 Central Industrial Drive
St. Louis, MO 63110
Phone: 314-771-3080
Fax: 314-771-4597
www.theyounggroup.net

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